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Psychosocial Adjustment of Adolescent Cancer Survivors: Time Perspective and Positive Emotions as Mediators to Quality of Life and Benefit Finding

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Psychosocial Adjustment of Adolescent Cancer Survivors:
Time Perspective and Positive Emotions as Mediators to
Quality of Life and Benefit Finding

A Dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy at Virginia Commonwealth University.

by

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Table of Contents

| | Page |
|----------------------------------|------|
| Acknowledgements | ii |
| List of Tables | vii |
| List of Figures | viii |
| Introduction | 1 |
| Cancer Survivorship | 4 |
| Quality of Life | 8 |
| Benefit Finding | 12 |
| Time Perspective | 21 |
| Positive Emotions | 29 |
| Specific Aims | 34 |
| Hypotheses | 35 |
| Research Design | 36 |
| Method | 39 |
| Participants | 39 |
| Data Collection Procedures | 43 |
| Instruments | 43 |
| Statistical Analyses | 47 |
| Predicted Results | 48 |

| | |
|---|-----|
| Results | 49 |
| Preliminary Analyses..... | 49 |
| Correlations among Variables..... | 53 |
| Preliminary Analyses of Mediator Variables..... | 57 |
| Summary of Preliminary Analyses..... | 61 |
| Primary Analyses | 61 |
| Discussion..... | 81 |
| References | 94 |
| Appendix | 106 |
| Vita..... | 118 |

List of Tables

| | Page |
|--|------|
| Table 1: Participant Demographics..... | 40 |
| Table 2: Descriptive Statistics for Dependent and Mediator Variables..... | 50 |
| Table 3: Correlation Matrix of All Variables Utilized in Study..... | 54 |
| Table 4: Revised Correlation Matrix and Descriptive Statistics for Positive Emotions and Time Perspective Indices..... | 62 |
| Table 5: Positive Emotions Index as a Mediating Variable Between Gender, Treatment Received, and Psychotherapy and Outcome Variables: Quality of Life and Positive Emotions..... | 66 |
| Table 6: Time Perspective Indices as Mediating Variables Between Gender, Treatment Received, and Psychotherapy and Outcome Variables: Quality of Life and Positive Emotions..... | 74 |

List of Figures

| | Page |
|---|------|
| Figure 1: Future Orientation and Positive Emotions | 28 |
| Figure 2: Overall Mediator Model..... | 35 |
| Figure 3: Positive Emotions Model | 64 |
| Figure 4: Results of the Path Analyses Delineating Those Paths Found to be Significant in Model 1..... | 71 |
| Figure 5: Time Perspective Model..... | 72 |
| Figure 6: Results of the Path Analyses Delineating Those Paths Found to be Significant in Model 2..... | 79 |

Abstract

PSYCHOSOCIAL ADJUSTMENT OF ADOLESCENT CANCER SURVIVORS:
TIME PERSPECTIVE AND POSITIVE EMOTIONS AS MEDIATORS TO
QUALITY OF LIFE AND BENEFIT FINDING

By Matthew John Bitsko, Ph.D.

A Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor
of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2005

Major Director: Marilyn Stern, Ph.D.
Director of Training and Professor, Department of Psychology

Adolescents with cancer are surviving at improved rates with levels of psychopathology in line with their healthy peers. Thus, recent psycho-oncology research is focusing on finding significant predictors to their positive adjustment and psychosocial functioning. The author examined adolescent cancer survivors ($n = 50$; diagnosis age = 10 – 21; 2 – 10 years post-diagnosis) to test the mediation effects of positive emotions (satisfaction with life, subjective happiness, and optimism) and time perspective on the outcome variables quality of life and benefit finding with demographic/medical variables (gender, number of treatments received for cancer, and previous psychotherapy) as

independent variables. Results indicated that positive emotions fully mediated the relationship between the number of treatments received for cancer and quality of life and partially mediated the relationship between having engaged in psychotherapy and quality of life with adolescent cancer survivors. Importantly, results indicated that patients' with a relapse diagnosis scored significantly different than those with no relapse diagnosis on quality of life. Although positive emotions were significantly associated with scores on benefit finding in a positive direction, benefit finding did not fit two of the four criteria for mediation. Time perspective indices did not meet full criteria for significant mediation with the relationships between independent and outcome variables. Regarding time perspective indices, significant associations included: prior participating in psychotherapy was associated with higher scores on a Past-Negative time perspective, the more treatments received for cancer was associated with higher scores on a Present-Focused time perspective, and higher scores on the Past-Negative time perspective was associated with lower scores on benefit finding. Discussion centers on the use of evidence-based interventions that cultivate positive emotions with adolescent cancer survivors and the utility of implementing quality of life assessment in pediatric medical settings. Continued emphasis is placed on larger sample sizes via multi-center cooperation that may better illustrate adjustment difficulties within subgroups of this population (i.e. relapse diagnosis). Future research considerations are provided for the constructs of time perspective and benefit finding.

Introduction

Over the past 30 years, the medical and psychosocial treatments of cancer have increased the 5-year survival rate for adolescents to greater than 75% (American Cancer Society [ACS], Facts & Figures, 2004; Robison et al., 2002). Also, the emerging field of psycho-oncology has taught us that adolescents surviving cancer can lead meaningful and successful lives, with rates of psychopathology often aligned with their healthy peers (Eisner, Hill, & Vance, 2000; Patenaude & Kupst, 2005; Zebrack & Zeltzer, 2003). As a result, current adolescent psycho-oncology research has directed its attention away from psychopathology prevention and toward finding correlates or predictors to adaptation, adjustment, and psychosocial functioning (Kazak, 2005). For adolescents already navigating a difficult developmental path, cancer diagnosis, treatment, and survival may have far-reaching implications for their psychosocial adjustment. Therefore, research that seeks to identify potential mediating factors that may facilitate positive psychosocial adjustment to adolescent cancer survivorship is essential.

Quality of life and benefit finding are two factors that have gained wide acceptance as indices of the adjustment process in adolescent cancer survivors (Bessel, 2001; Tennen & Affleck, 2002). The assessment of a cancer patient's quality of life has achieved special prominence, given the wide array of treatment protocols that must balance the medical likelihood of eradicating the disease with the subsequent ability of the patient to survive in a relatively capable and pain-free condition (Sama et al, 2002). Because recent research has emphasized the impact on individuals facing adversity who

report areas of positive growth from their negative experiences (Affleck & Tennen, 1996; Tennen & Affleck, 2002), benefit finding is considered another important outcome measure in this population. Future study into significant predictors and mediators of quality of life and benefit finding with adolescent cancer survivors will increase our understanding of their adjustment to this chronic illness.

Time perspective is the way individuals' partition their experience into past, present, and future time frames and is a critical component to coping, adjustment, and choice of health behaviors across the lifespan (Zimbardo & Boyd, 1999). The use of positive emotions, such as subjective well being, happiness, and optimism are hallmarks to optimal functioning in the arenas of mental and physical health within a variety of populations adjusting to stressors across the lifespan (Fredrickson, 2000; 2001; 2002). Time perspective and use of positive emotions appear to be vital psychosocial factors that could mediate adolescent cancer survivors' quality of life and ability to find benefits from their experience (Fredrickson, 2000; Zimbardo & Boyd, 1999). It will be argued here that although little research has specifically considered both time perspective and the use of positive emotions in adolescent adjustment to cancer, both are important components to quality of life and benefit finding.

The first purpose of this study is to increase our understanding of how adolescent cancer survivors adjust to their chronic illness. By examining the linkages between demographic (age at diagnosis, gender, etc.) and medical variables (diagnosis type, treatment duration and intensity, etc.) to survivors' quality of life and benefit finding, the current study hopes to identify critical factors that impact their adjustment to the chronic

illness of adolescent cancer. The current study will build upon previous medical and psycho-oncology literature that highlights demographic/medical variables that can lead to positive adjustment via improved quality of life and benefit finding.

The second purpose of this study is to evaluate potential mediator variables that can account for significant differences between demographic/medical factors and survivors' quality of life and benefit finding. In the social sciences, mediators explain how external physical events take on internal psychological significance (Baron and Kenny, 1986). For example, this study will evaluate if time perspective and positive emotions are salient psychological processes that affect cancer survivors' quality of life when compared to the demographic/medical factors highlighted in previous research. In short, understanding the psychological links, or mediators, between demographic/medical variables and subsequent quality of life will help us understand the overall adjustment process of this population. Mediation models of psychological processes are especially useful for theory development and identifying possible points of intervention in applied work (Shrout & Bolger, 2002). Time perspective and positive emotions are two sets of hypothesized mediator variables that, although previously understudied in this population, have shown strong and positive results in the adjustment process of patients with chronic illnesses such as cancer. Understanding the mediator effects of one's time perspective and use of positive emotions in the adjustment process of adolescent cancer survival will inform future theory development, psychosocial treatment, and interventions within this population as they navigate through adolescence and across the lifespan.

This study highlights two specific applications of the psycho-oncology literature that have previously been unexamined. First, no research to date has considered a mediator model of time perspective and positive emotions on the quality of life and benefit finding of cancer survivors. Second, no research to date has applied such a model to the specific population of adolescent cancer survivors. As such, the current study appears appropriately timed to examine emerging psychosocial factors that could potentially mediate the adjustment process of the understudied population of adolescent cancer survivors.

Given the need for psycho-oncology research to identify significant predictors to positive adjustment in adolescent cancer survivors, the current study will first investigate this population's (2 - 10 years post-diagnosis) quality of life and benefit finding in relation to their demographic/medical factors. Since levels of quality of life and the ability to find benefit in their experience are hypothesized to vary greatly within this population, their individual uses of time perspective and positive emotions are expected to emerge as two sets of salient and mediating psychosocial factors in the adjustment process in adolescent cancer survivors. Thus, a greater understanding of how an adolescent cancer survivor's time perspective and use of positive emotions affect their quality of life and benefit finding two to ten years post-diagnosis is expected to increase our understanding of this patient population.

Cancer Survivorship

Over 9,000 adolescents were diagnosed with cancer in 2004 (ACS, Facts & Figures, 2004). Improvements in cancer therapy and supportive care have increased the

likelihood of five-year survival from under 30% in 1960, to over 70% in 1990, and current rates of over 75% (ACS, Facts & Figures, 2004; Robison et al., 2002). It is estimated that one out of every 900 individuals in the United States between the age of 15 and 45 years is a survivor of childhood or adolescent cancer (Robison et al., 2002).

Although cancer in children and adolescents appears relatively rare, the rates of incidence are rising (Miller, Young, & Nivakovic, 1995). Given the increased rates of occurrence and survival in child and adolescent cancer patients, the scientific community has both an obligation and opportunity to assess the long-term psychosocial consequences of this unique and ever-growing population. The obligations of mental and physical healthcare providers lie in their increased ability to educate survivors about the potential impacts of cancer diagnosis, treatment, and survival on their health. Likewise, there is an excellent opportunity to gain new knowledge and insight about the long-term effects of cancer and therapy that can lead to improved treatment protocols and intervention strategies that could increase their survival and subsequent quality of life (www.cancer.umn.edu/ltfu). Therefore, a comprehensive review of adolescent cancer survivorship must consider both the negative and positive consequences of their condition.

Negative Consequences to Adolescent Cancer Survival. Long-term adolescent cancer survivors are at risk for developing a wide variety of adverse outcomes throughout their lifespan (Robison et al., 2002). Some of these adverse outcomes include: early death, second neoplasms, organ dysfunction, disturbances in physical growth and psychosocial development, decreased fertility, impaired intellectual functioning, difficulties in obtaining employment and insurance, and overall reduced quality of life

(Hudson et al., 2003; Robison et al., 2002). In addition, some studies have documented that child and adolescent cancer survivors have increased rates of psychological maladjustment as high as 50% greater than their healthy cohorts (Koocher & O'Malley, 1981; Mulhern, Wasserman, Friedman, & Fairclough, 1989). Specifically, one study reported social competence deficits and behavioral problems in 42% of the adolescent cancer-surviving sample relative to normative data for the general population (Mulhern et al., 1989). Such bleak historical findings lead us to consider more recent literature on the psychosocial impact that cancer survival has on adolescents.

A number of more recent studies suggest that adolescent survivors are at a heightened risk for poor psychosocial adjustment, including: depression, general anxiety, poor self-esteem, as well as disturbances to their social functioning, school performance, and career planning (Bessel, 2001; Varni et al., 1994, 1999, 2001). A comprehensive nation-wide survey of nearly nine thousand child and adolescent cancer survivors and their siblings found significant effects in the occurrence of depression and somatic distress in survivors (Zebrack et al., 2002). Although the majority of respondents did not demonstrate depressive and somatic distress symptoms, survivors were significantly more likely than sibling controls to report symptoms of depression and somatic distress. Overall, these findings indicated that gender, socioeconomic status (SES), and type and intensity of cancer treatment were the most predictive variables of depression and somatic distress symptoms. Specifically, women and individuals from low SES backgrounds were significantly more likely to indicate symptoms of depression and somatic distress than were men and those from a higher SES, regardless of

survivor/sibling status. In addition, the only treatment variable for survivors that predicted depressive or somatic distress symptoms was exposure to intensive chemotherapy treatment. Thus, the most recent literature suggests that gender, SES, and type and intensity of cancer treatment are important factors in the psychosocial adjustment in adolescent cancer survivorship (Zebrack et al., 2002). Although there appears to be much promise as to the resiliency and healthy psychosocial development of adolescent cancer survivors, future research calls for the investigation of “psychosocial pathways by which cancer influences future psychosocial functioning” (Zebrack et al., 2002, p. 42).

Positive Consequences to Adolescent Cancer Survival. In stark contrast to the research cited above, a nearly equal number of studies have indicated a picture of normal adjustment with adolescent cancer survivors, with a relative absence of psychopathology and adjustment difficulties (Fritz & Williams, 1988; Kazak, 1994; Kazak, 2005; Kazak & Meadows, 1989; Noll et al., 1993; Robison et al., 2002; Spirito, Stark, Cobiella, Drigan, Androkites, & Hewett, 1990; Stern et al, 1991, 1993). Recent studies have emphasized that cancer-surviving adolescents have instances of depression, anxiety, and other forms of psychosocial adjustment well within the realms of the normative population and even excelling in such areas as career choice and improved coping skills (Kazak, 2005; Patenaude & Kupst, 2005). For example, in a comprehensive nation-wide study (Robison et al., 2002), the authors indicated that survivors are approximately 1.6 to 1.7 times more likely to report symptomatic levels of depression and somatic distress than a comparison group of siblings. The overall ratings of depressive symptomology for survivors,

however, fell within the normative general population rates of 3% to 10% of young adults between the ages of 18 and 44 (Blazer, Kessler, McGonagle, & Swartz, 1994). This comparison highlights the authors overall finding that suggests that the majority of adolescent cancer survivors are psychologically healthy (Patenaude & Kupst, 2005; Robison et al., 2002).

There are many potential reasons for the disparate findings of psychosocial adjustment to adolescent cancer survival. Such contrasting findings may be attributable to the wide heterogeneity of the participants (on factors such as age at diagnosis, type and intensity of treatment, and time since diagnosis), methodological differences such as outcome variables and measures utilized, the respondent surveyed (patient, parent, teacher, etc.), sample size, and the timing of assessments. In an attempt to synthesize these contradictory findings, some researchers have adopted a “middle of the road” approach (Kazak, 1994, p. 172). This approach suggests that severe psychopathology is relatively rare, but that mild to moderate adjustment difficulties are often seen in a significant percentage of survivors. As such, future research needs to clearly identify and evaluate potential significant predictors to improved psychosocial outcomes with adolescent cancer survivors (Kazak, 2005). The present study will, therefore, examine age at diagnosis, time since diagnosis, and type and severity of treatment as potential predictor variables of adjustment in adolescent cancer survival.

Quality of Life

Recently, great attention has been given to the study of quality of life (QOL) within the context of the medical setting. Given the rapid advancements in medical

technology that now increasingly enable physicians to prolong physical life in patients, the study of QOL becomes even more important from both a basic research as well as ethical perspective. QOL is defined by the World Health Organization (Szabo, 1996) as an individual's subjective view of his or her life position in relation to specific goals, expectations, and values. By its very definition, QOL is a subjective and multidimensional construct that encompasses a variety of domains, including: physical health, psychological state, social relationships, level of independence, spirituality, and relationship to the environment (Cella, 1992; Graves, 2003). In an attempt to consolidate the ever expanding field of QOL research, many researchers have sought to identify the common factors of QOL shared within the literature. One such meta-analysis concluded that four domains are most consistently associated with QOL research: physical, affective, social, and environmental (Powers et al., 1999).

The assessment of QOL is an established practice in measuring physical and psychosocial adjustment for patients diagnosed with cancer (Bessel, 2001). Quality of life has become a widely accepted, if not almost universal, outcome measure within the field of psycho-oncology that continually strives to balance the efficacy of possible treatment options with the potential impediments and benefits to the patients' future health and well-being. Specific to the psycho-oncology literature, two recent meta-analyses presented four domains that are especially relevant to this population (Graves, 2003; Owens et al., 2001). These domains include: the physical domain (i.e. subjective ratings of pain, somatic symptoms, and fatigue), the affective domain (i.e. psychological functions including depression, anxiety, and coping), the social domain (i.e. perceived

social support, marital satisfaction, communication, and sexual activity), and the functional domain (i.e. perception of the domestic environment, hours at work or school per week, amount of household chores, leisure activities, activities of daily living, and financial difficulties; Graves, 2003; Owens et al., 2001). Therefore, a comprehensive assessment of quality of life with adolescent cancer survivors must incorporate all domains listed above.

As can be seen by the definitions presented above, the expansive field of QOL research has many common goals and concepts when attempting to apply its construct to a wide variety of populations. There is much controversy, however, in how QOL can be assessed across populations of very divergent maladies, competencies, ages, and stages of development (Sama et al., 2002). For this reason, it is critically important from a methodological standpoint that QOL researchers utilize developmentally appropriate and disease-specific measures that fit their population sample(s) (Bessel, 2001; Sama et al., 2002). In order to fully respect the participants' unique condition and developmental standing, the proposed study focuses on adolescent cancer survivors' quality of life while taking into account disease-specific factors.

Other Considerations for Quality of Life Research. To date, the psycho-oncology literature has produced minimal research on mediating factors to quality of life in both adult and adolescent cancer survivors. Instead, research has focused on quantitatively testing interventions that could assist cancer survivors' quality of life and adjustment to their disease. Such interventions include a variety of stress-reduction approaches, including both individual and group treatment (Anderson, 1992) in the areas of

mindfulness-based techniques (relaxation, meditation, and yoga; Carlson, Speca, Patel, Kamala, & Goody, 2003), cognitive-behavioral techniques (Antoni et al., 2001), and educational programs (Lepore, Helgeson, Eton, & Schulz, 2003). Perhaps one reason for their moderate, yet often tenuous, levels of success and small effect sizes is their lack of theoretically-based and empirically validated origins. As such, the current study will attempt to first take a step back and empirically validate potential mediator pathways (time perspective and positive emotions) to adolescent cancer survivors' predictor variables (demographic/medical factors) and criterion variables of positive adjustment (quality of life and benefit finding). In doing so, the researcher will attempt to clarify the theoretical links to improved quality of life and benefit finding with this population, thus providing clear guidance for future interventions.

Other salient factors in conducting quality of life outcome research are informed by recent qualitative articles by an oncology surgeons' perspective and that of two physician-researchers who survived cancer (Anderson, 2002; Tierney & McKinley, 2002). As an oncology surgeon, Anderson (2002) underscores his belief that quality of life outcome research may be the most important factors for clinicians to understand since "survival statistics inadequately address the critical quality of life issues that dominate their [patients'] existence once cancer has been diagnosed" (p. III-28). As medical oncology researchers, Tierney and McKinley (2002) outline their "eight D's" that represented their own diagnosis and treatment of cancer (diagnosis, dying, discomfort, disability, drug and other treatment effects, dependency, doubt, and death; p. III-20). In addition, these authors highlighted the importance of hope and "making the

most of our remaining time” as it related to their quality of life as cancer survivors. Finally, in their discussion of how they have subsequently benefited from their cancer experience, these oncology researchers implored professionals to “not just focus on survival,” but rather to “focus on both the negative and positive effects of cancer and its treatment” (p. III-26). To be sure, these qualitative claims bolster the quantitative research that asserts that benefit finding should be considered in quality of life outcome studies and also the importance of time perspective and positive emotions in the process of their journey.

Benefit Finding

There are two Lance Armstrongs, pre-cancer, and post. Everybody’s favorite question is “How did cancer change you?” The real question is how didn’t it change me? I left my house on October 2, 1996, as one person and come home another ... The truth is that cancer was the best thing that ever happened to me. I don’t know why I got the illness, but it did wonders for me, and I wouldn’t want to walk away from it. Why would I want to change, even for a day, the most important and shaping event of my life?

- Lance Armstrong,

- *It's Not About the Bike: My Journey Back to Life*.

Benefit finding is a relatively new psychological construct that addresses the age-old idea of how individuals facing adversity often report benefits and growth from their negative experiences (Affleck & Tennen, 1996; Tennen & Affleck, 2002). Benefit finding is defined as the identification of benefit from adversity (Tennen & Affleck,

2002). Benefit finding has been linked to psychological and physical health, and it plays a prominent role in theories of cognitive adaptation to threatening circumstances (Janoff-Bulman, 1992; Taylor, 1983), posttraumatic growth (Tedeschi & Calhoun, 1995), and psychological thriving (Epel, McEwen, & Ickovics, 1998). Importantly, benefit finding has been found to be a related, but distinct, construct from posttraumatic growth (defined as the experience of significant positive change arising from the struggle with a major life crisis) in breast cancer survivors (Sears, Stanton, & Danoff-Burg, 2003). Also, benefit finding has been related to positive personality characteristics such as optimism, extraversion, and hope (Tennen & Affleck, 1999, 2002). In sum, benefit finding appears common among individuals facing a myriad of threatening life events and has been shown to both predict and signify emotional and physical adaptation months and years after the event (Tennen & Affleck, 2002).

The construct of benefit finding has, however, been viewed by previous researchers within a variety of theoretical frameworks. These frameworks have included benefit finding as: a selective cognitive appraisal, a coping strategy, a personality characteristic, a reflection of verifiable change and growth, a temperament characteristic, a manifestation of an implicit theory of change, or a temporal comparison (Tennen & Affleck, 2002). As such, Tennen and Affleck (2002) highlight the importance of a clear empirical formulation by future researchers when considering the construct of benefit finding. Also, Tennen and Affleck (2002) recommend the use of benefit finding as an adjustment outcome measure in an effort to further solidify the conceptualization of the construct in future research. Therefore, benefit finding will be defined in the current

study as a verification of growth and change in those facing adversity that can be found both within weeks of the event and retained for many years (Tennen & Affleck, 2002). Benefit finding, however defined, has been applied to many life traumas and a variety of medical conditions.

Benefit Finding and Life Trauma. Research on the topic of benefit finding has been applied to a wide range of major life traumas. In the first published longitudinal study of finding benefits in the midst of adversity, Thompson (1985) surveyed individuals whose apartments had been destroyed by fire. Although the sample was small, this study was the first to provide empirical evidence that benefit finding might predict later negative mood, pleasure in daily activities, and physical symptoms. Also, the researcher noted that participants commonly cited being helped by others and learning important life lessons as their main benefit and that cognitive adaptation 1 to 2 weeks after the fire predicted well-being one year later (Thompson, 1985; Tennen & Affleck, 2002). McMillan, Smith, and Fisher (1997) longitudinally examined people who had experienced one of three disasters involving extensive property damage and loss of life: a severe tornado, a plane crashing into a hotel lobby, or a mass shooting. Their qualitative interview found that 55% of those involved in the plane crash reported some kind of benefit, compared to 76% of those involved in the shooting, and 90% of those who survived the tornado. In their 3 year follow up of these victims, the researchers found an association between those perceiving no benefits and a later PTSD diagnosis, even after controlling for injury during the disaster, gender, and the number of pre-incident diagnoses. In addition, participants with high exposure to the trauma (defined as whether

they thought they were going to die during the disaster, whether they were injured, whether they knew anyone who had died during the disaster, and whether they saw or did anything they found disgusting during or immediately after the disaster) who perceived some benefit had the greatest recovery, whereas those who did not perceive benefit had the least amount of recovery (McMillan, Smith, & Fisher 1997). These results of benefit finding in the face of traumatic situations laid the groundwork for additional studies with individuals who had experienced a significant personal loss.

Benefit Finding and Loss. In a study of bereaved individuals who experienced the loss of a parent, spouse, partner, child, or sibling, researchers found that seventy-three percent of participants reported that they had found something positive in the experience 6 months post-loss (Davis, Nolen-Hoeksema, & Larson, 1998). Examples of benefit finding in this sample included personal growth, new life perspective, strengthening family bonds, and support from others. Importantly, the investigators found that it was not the number of benefits that held predictive value but rather whether any benefit was endorsed. Also, the results indicated that making sense of their loss was associated with less distress only in the first year post-loss, whereas reports of benefit finding were most strongly associated with positive adjustment at interviews 13 and 18 months post-loss (Davis, Nolen-Hoeksema, & Larson, 1998).

Similarly, another study examined the AIDS-related mortality among seropositive participants who were bereaving the loss of a close friend or partner to AIDS (Bower et al., 1998). Their findings paralleled those found in previous bereavement studies; participants described a greater appreciation for loved ones, a perception of life as

precious, increased self-understanding, and enhanced personal functioning. In addition, the researchers found that benefit finding anticipated CD4 T lymphocyte decline in the seropositive bereaved individuals. As a result, the researchers concluded that benefit finding was associated with a lower rate of AIDS-related mortality in this group over the next 4 to 9 years since the mortality rate was fully mediated by CD 4 slope (Bower et al., 1998). Based on this pattern of results, future research could seek to further explicate how individuals faced with a major loss who emphasize close relationships and personal growth appear to have both physiological benefits and a lower rate of mortality (Tennen & Affleck, 2002).

Benefit Finding and Medical Conditions. Within one such medical setting, researchers asked mothers whose infants were in a neonatal intensive care unit (NICU) whether they had found any benefits from their child's unexpected delivery outcome and subsequent hospitalization (Affleck, Tennen, & Rowe, 1991). Seventy-five percent of these mothers cited at least one benefit from this experience, including: improved relationships with family and friends, the importance of keeping life's problems in perspective, increased empathy, positive changes in their personality, and the certainty that their child was now even more precious to them. Interestingly, benefit finding predicted not only brighter mood and less distress by the mothers 6 and 18 months later, but also their child's developmental test scores 18 months later after controlling for a variety of demographic conditions. This is a critical finding since it extends the positive outcomes of benefit finding beyond the realm of self-report and psychological well being to later patient functioning and status (Affleck et al., 1991; Tennen & Affleck, 2002). As

such, it is important to consider how benefit finding can specifically apply to medical patients with a variety of diagnoses.

Benefit finding is a critical outcome measure within the medical fields of cardiology and chronic illness, such as Multiple Sclerosis (MS), lupus, rheumatoid arthritis, and cancer (Tennen & Affleck, 2002). For example, 58% of initial heart attack patients reported finding some benefit seven weeks post heart attack from their experience, including: anticipated changes in lifestyle, increased enjoyment, valued lessons about the importance of health behavior, and positive changes in their values and life philosophies. Eight years later (and controlling for age, socioeconomic status, and the severity of the initial attack), those men who had reported benefits were in better cardiac health and were less likely to have suffered another heart attack (Affleck, Tennen, Croog, & Levine, 1987). Although these findings are intriguing, the authors warn that because of the complex nature of medical survival and recovery, we remain a long way from fully understanding the predictive and / or mediational pathways that benefit finding could have on health outcomes (Tennen & Affleck, 2002). Therefore, the current study's emphasis on mediator pathways to benefit finding in adolescent cancer survivors appears especially appropriate.

In a study of the psychosocial adjustment of patients with MS, researchers found that three areas of subjective patient experiences emerged: demoralization, benefit finding, and deteriorated relationships (Mohr et al., 1999). The process of benefit finding within this population included a deepening of relationships, enhanced appreciation of life, and increased spiritual interests. Also, it was found that benefit finding was

associated with positive appraisal and seeking support but unrelated to depression and higher levels of anxiety and anger. In a related study, researchers found patients with rheumatoid arthritis that perceived benefits moderated the relationship between pain severity and activity limitations (Tennen, Affleck, Urrows, Higgins, & Mendola, 1992). Specifically, patients who reported more benefits from their illness at the start of the study later reported fewer days where their activities were limited by their increased levels of daily pain (Tennen et al., 1992). Taken together, these findings on patients with chronic illness indicate that benefit finding is a potentially important yet poorly understood factor of one's illness experience and adjustment.

Building on the findings of Mohr et al. (1999) with MS patients, other researchers attempted to extend the generality of benefit finding to patients with cancer and lupus (Katz, Flasher, Cacciapaglia, & Nelson, 2001). Results showed a similar three factor solution reported by Mohr et al. (1999; demoralization, benefit finding, and deteriorated relationships), specifically showing that average pain ratings were inversely related to benefit finding. In addition, cancer and lupus patients who perceived more benefits from their illness suffered less. The authors concluded that benefit finding is not unique to MS patients, but also occurs in patients with other chronic illnesses (Katz et al., 2001).

Benefit Finding and Cancer. Finally, specific research has been conducted on the concept of benefit finding and cancer patients (Antoni et al., 2001; Thornton, 2002). In her qualitative and quantitative meta-analysis of cancer patients, Thornton (2002) summarized three areas in which cancer survivors frequently report deriving benefits: life perspective, interpersonal relationships, and the self. Although benefit finding is seen in a

vast majority of cancer patients, Thornton (2002) highlighted the incompleteness of quality of life and adjustment outcome measures in the psycho-oncology literature and point to their overemphasis on maladjustment. As such, the author suggests a complete evaluation of patients' quality of life that includes possible positive effects (i.e. benefit finding and use of positive emotions) that the disease has had in the cancer patient's life. In addition, benefit finding in cancer patients appears to operate independently of demographic and medical variables, thus highlighting the need to examine their relationships in future studies (Thornton, 2002). Therefore, the current study's examination of both quality of life and benefit finding outcome measures as well as its consideration of the relationship of benefit finding to demographic and medical variables with adolescent cancer survivors appears theoretically and empirically appropriate (Thornton, 2002).

Antoni et al. (2001) examined the effects of a cognitive-behavioral group intervention on the ability for women with early-stage breast cancer to find benefits in their experience. In their attempt to delineate the impact of optimism on benefit finding, the researchers conceptualized optimism as both an independent and dependent variable (i.e., whether conceived as a personality variable or a malleable skill to be learned via the intervention). The results indicated that those lowest in optimism at baseline had the greatest amount of growth in the areas of optimism and benefit finding. This finding of increased optimism (defined as a thought and planning process oriented toward the future) highlights the importance of one's time perspective (past, present, and future) on one's ability to have positive responses to their traumatic event. For example, suggestions

for future interventions with cancer patients emphasize the importance of, “working within the client’s time frame and belief system are important to avoid creating expectations for growth that may be premature and insensitive” (Thornton, 2002, p. 161). As such, it appears that a comprehensive assessment of one’s total time perspective is important in their ability to find benefit. Finally, the positive responses seen by Antoni et al. (2001) included growth, appreciation of life, shift in priorities, and positive affect. This research emphasizes the importance of collecting information on positive experiences, as opposed to exclusively negative experiences, when studying people who are dealing with adversity (Antoni et al., 2001; Folkman, 1997).

In summary, benefit finding has been shown to have long-term health benefits, decreased mortality and morbidity, and less functional impairment day-to-day on those who have experienced major loss, disaster, and physical illness (Tennen & Affleck, 2002). Benefit finding appears to be a vital area of adjustment for cancer survivors that could be associated with one’s time perspective and use of positive emotions. Finally, it appears that, to date, no research has focused on the construct of benefit finding with adolescent cancer survivors and their adjustment across the lifespan.

Time Perspective

Once you figure out you’re going to live, you have to decide how to, and that’s not an uncomplicated matter. You ask yourself: now that I know I’m not going to die, what will I do? What’s the highest and best use of my self? These things aren’t linear, they’re mysterious calculus. For me, the best use of myself has been to race in the Tour de France, the most grueling sporting event in the world.

- Lance Armstrong,

Every Second Counts

“Enjoy every sandwich.”

- Warren Zevon, musical artist and cancer patient (Deceased, September 2003).

The concept of time is a powerful motivator of all human behavior. Thus, one's time perspective, or the way individuals partition their experience into past, present, and future time frames, has been shown to be a powerful factor in choice of health behaviors (Zimbardo & Boyd, 1999). Historically, William James (1890) emphasized time perception as central to the human psychological experience when he devoted an entire chapter to the topic in his classic text, *The Principles of Psychology*. Existential philosophers and psychologists, alike, have championed how one's conception of time clearly impacts their experience of the world and their place within it (Heidegger, 1927; Husserl, 1964). Additionally, Lewin (1951) claimed the significance of time perspective as “the totality of the individual's views of his psychological future and psychological past existing at a given time” (p. 75). Finally, Bandura (1997) continues to emphasize time perspective with his self-efficacy theory of behavioral self-regulation, that is, the composite of efficacy beliefs conceptualized as in past experiences, their current appraisals, and subsequent reflections on future options.

The topic of time perspective has gained renewed interest within the field of positive psychology. Seligman and Csikszentmihalyi (2000) alluded to an overall balanced perspective of time in their definition of positive psychology, where the focus is on “... well-being, contentment, and satisfaction (in the past); hope and optimism (for the

future); and flow and happiness (in the present)” (p. 5). Such a holistic approach to positive traits and experiences, and not psychology’s historical focus on pathology, can empower psychologists with the skills and framework to improve their clients’ quality of life.

Time perspective, in its purest form, is about balance and moderation (Zimbardo, 2002). Zimbardo (2002) speaks of an optimally balanced temporal triad, where the components of past, present, and future “blend and flexibly engage, depending on a situation’s demands and our needs and values” (p. 62). To the everyday person, a positive orientation to the past connects us with our family, heritage, religion, and nation while a future orientation can supply us with the capacity to anticipate new heights, dreams, and potentials. A present time perspective allows us to be in the moment, spontaneous, and open to new experiences and emotions. These three time zones, if balanced and moderated accordingly, can provide an individual with a lifetime of opportunity, health, and growth (Zimbardo, 2002).

Time perspective is often measured via the Zimbardo Time Perspective Inventory (ZTPI), that partitions time perspective within five distinct factors: past-negative, present-hedonistic, future, past-positive, and present-fatalistic (Zimbardo & Boyd, 1999). A negative rumination toward the past has been associated with depression (Lyubomirsky et al., 1995). Additionally, an overly present-focused time perspective has been associated with low impulse control, increased levels of substance abuse, and risky driving behaviors in adolescents (Keough et al., 1999; Wills et al., 2001; Zimbardo et al., 1997). Finally, a strong future orientation has been linked with better organization, goal

selection and perseverance, school performance and career exploration, positive health behaviors, happiness, resiliency, and optimism in adolescents and adults (Lang et al., 2002; Mahon et al., 1994, 1997; Stern et al., 1991; Strack et al., 1987). Taken together, one's past, present, and future time perspectives are a powerful factor in choice of health behaviors and impacts overall adaptation to life events. As such, time perspective research has focused on a variety of domains and populations, including its effects on trauma survivors, its role in adolescent development, and adjustment to chronic illnesses.

Time Perspective and Trauma. Holman and Silver (1998) studied the relations between temporal orientation (past, present, and future) and long-term psychological distress in three samples of traumatized individuals: adult victims of childhood incest, Vietnam War veterans, and residents of two southern California communities devastated by fire. Their research focused on two important questions previously unaddressed in the literature: a) what is the relationship between temporal orientation and traumatic experience, and b) how is temporal orientation related to the long-term impact of trauma on psychological well being? Results indicated that a past temporal orientation was associated with elevated levels of distress long after the trauma had passed. Also, temporal disintegration, whereby the present moment becomes isolated from the continuity of past and future time, was associated with a high degree of past temporal orientation over time and subsequent distress. The results, although powerful, did not utilize a quantitative measure that could objectively consider all possible time perspectives, especially a positively oriented present and/or future time frame(s). Further, and as suggested by Antoni et al. (2001), the authors did not consider any potential

positive emotions or effects, such as benefit finding, in their analysis. Future research must seek to fully evaluate the role of time perspective on positive aspects of adjustment, such as benefit finding, in individuals facing adversity.

Time Perspective and Adolescent Development. Research and theory on the development of time perspective in adolescents has primarily focused on their cognitive ability to think about the future. A future time orientation has been shown to be very important to adolescents' overall development, health-related decisions, maturity, and career development and choice (Erikson, 1968; Nurmi, 1991; Zimbardo & Boyd, 1999). Research from various disciplines has considered adolescents' ability to conceive of future time and its implications on their behavior.

Erikson's (1968) theory of adolescent development focused on the achievement of ego identity while avoiding role confusion. During this time of fertile ego development, Erikson (1968) emphasized the importance of a mature time perspective where the young person acquires self-certainty as opposed to self-consciousness and self-doubt. His belief in a psychosocial moratorium, for example, provides the adolescent with a time to slow down to think about future plans and successes while considering both their past and present situations. Erikson (1968) proposed an example of a difficult and diffuse time perspective crisis during adolescence where one might feel as if s/he were "moving in molasses" and "simultaneously very young, and in fact baby-like, and old beyond rejuvenation" (p. 169). It is during adolescence, perhaps, that the individual must first learn to effectively balance and moderate past, present, and future time perspectives.

Nurmi (1991) provided a detailed outline of how adolescents develop their abilities to think about and plan for the future. Nurmi (1991) synthesized an adolescent's orientation to the future as revolving around three basic processes: motivation, planning, and evaluation. Thus, an adolescent's willingness and ability to think about their future will have a significant impact across their lifespan. First, adolescents consider their future lifespan development when faced with a number of normative age-specific tasks set forth by their parents, peers, and teachers. Second, adolescents begin to realize that their future-oriented decisions will have a critical impact on issues related to future career, lifestyle, and family outcomes. Third, how an adolescent sees their future plays an important part in their identity formation and their subsequent exploration and commitment to the future-oriented interests stated above (Rowe & Marcia, 1980; Nurmi, 1991). Moreover, adolescent problem behaviors (such as delinquency, problems in career choice, and substance abuse) are expected to be related to how a young person sees their future. Certainly, the diagnosis of a chronic illness, such as cancer, could reasonably be expected to impact an adolescent's development and time perspective that might have far-reaching implications across the lifespan.

Colarusso (1988) presented a psychoanalytical approach to an adolescent's development and aptitude towards a future time perspective. The past and present time perspectives begin to be viewed quite differently during mid-adolescence. He cites Piaget's (1969) emphasis of an adolescents' newly developed cognitive capacities as they move toward formal operational thinking and their ability to understand both ideal and abstract theories and concepts. This is the critical time when most adolescents are content

to live in the present, but now are also able to project their ideas and passions into the future. Late adolescence is marked by the psychic conflict of having to leave home, live on their own, and assume primary control of their own time and actions. Colarusso (1988) states three salient developmental tasks that late adolescents must face: the acceptance of a physically and sexually mature body, the detachment from infantile objects (such as emotional and physical reliance on parental figures), and the engagement into the adult world of work and preparation for a career. Such developmental crises either speak to the late adolescents' current ability to think and plan for the future or their need to develop and act upon their new cognitive skills in regard to the future. Given these contentions, both cancer diagnosis and survivorship at various developmental periods of adolescence could reasonably be suggested to have a critical impact on the development of their time perspective and adjustment process.

Time Perspective, Chronic Illness, and Cancer. Mann (2001) considered the effects of a future time perspective on the health behaviors of HIV-infected women. Specifically, she considered the relationship of optimism and pessimism to the health-promoting behaviors of patients who were either asked or not asked (control group) to write about their future. Among participants who were low in optimism, the writing intervention led to increased optimism, increased self-reported adherence to medications, and decreased distress from medication side effects, compared to controls that did not write. Paradoxically, participants initially high in optimism showed the opposite effects after writing about their future. Therefore, results suggest that a future-oriented writing

intervention may be a promising technique to increase medication adherence and decrease symptom distress in pessimistic patients (Mann, 2001).

Mann led an additional study of similar methodology that randomly assigned a group of childhood cancer survivors the task of writing about either their past, present, or future events over a two week span (Mann, Kato, Figdor, & Zimbardo, 1999). Results indicated that writing about their future led to significant increases in optimism, whereas writing about the present had no effect and writing about the past decreased optimism. In line with her research presented above (Mann, 2001), pessimists were most helped by writing about their future; their optimism increased by 17%, relative to 3% for the optimists (Mann et al., 1999). Not surprisingly, among all participants, regardless of writing assignment, future time perspective was positively associated with optimism (Mann et al., 1999). This research is an example of the effects of future time perspective on optimism and the adjustment of childhood cancer survivors.

Agrawal and Pandey (1998) examined future orientation (FO), optimism, and satisfaction with life (SWL) in 22 women suffering from chronic illnesses such as cancer, diabetes, cardiovascular disease, and asthma, and 22 healthy and demographically matched controls. The results showed differences in FO and optimism of chronic patients compared with the non-patient group. Patients with a high FO actively thought about and evaluated their future more positively and optimistically than those with a low FO. Within both patient and non-patient groups, those with either a high or low FO exhibited different coping styles. The authors concluded that patients with a high FO used efficient and positive coping techniques in dealing with the problems at hand and have greater

SWL (Agrawal & Pandey, 1998; Figure 1). Therefore, there appears to be a link between one's time perspective and their subsequent adjustment and adaptation to chronic illness. Because significant differences were seen in FO and optimism between these two groups, future research should seek to further understand the role of both present and past time orientations and satisfaction with life on patients' adjustment to their disease.

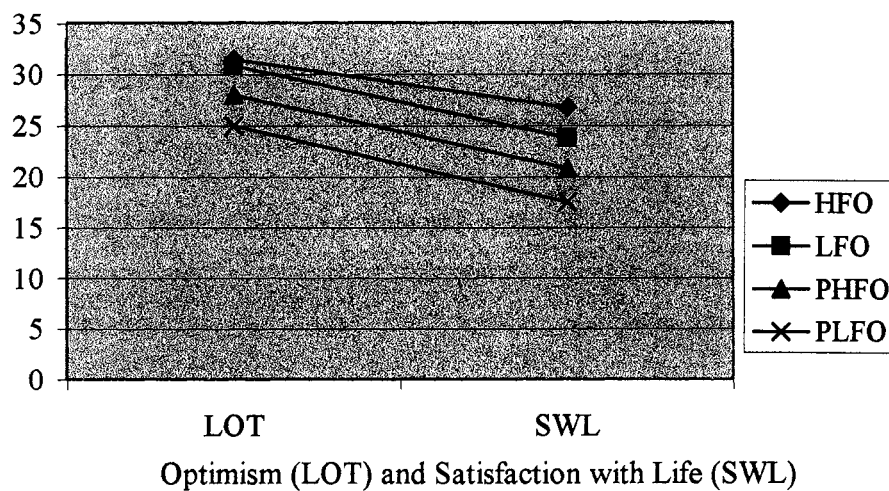


Figure 1. Future Orientation and Positive Emotions. Future Orientation (FO). HFO = high future orientation, LFO = low future orientation, PHFO = patient high future orientation, and PLFO = patient low future orientation.

The research cited above clearly indicated that one's time perspective could have a powerful effect on adjustment to chronic illnesses such as cancer. Future research with these populations should consider the possible mediator role of what Zimbardo (2002)

called the balanced temporal triad, where the components of past, present, and future “blend and flexibly engage, depending on a situation’s demands and our needs and values” (p. 62). In addition, continued emphasis should be placed on the understudied yet critically important population of adolescent cancer survivors.

Positive Emotions

The focus on positive emotions is an area of study gaining a resurgence of interest within the field of positive psychology (Fredrickson, 2000; Seligman & Csikszentmihalyi, 2000). At first glance, it appears that positive emotions serve as markers in people’s lives where emotions such as joy, interest, contentment, and love are more present, or salient, than negative emotions – such as anxiety, sadness, anger, and despair (Fredrickson, 2000). Consistent with this logic, the overall balance of people’s positive and negative emotions has been shown to predict their judgments of subjective well being (Diener, Sandvik, & Pavot, 1991). However, Fredrickson (2000, 2001, 2002) suggests that positive emotions not only *signal* optimal functioning and happiness but also can *produce* optimal functioning, both in the present moment and over the long term. As such, Fredrickson (2002) believed that, “we should work to cultivate positive emotions in ourselves and in those around us not just as end states in themselves, but also as a means to achieving psychological growth and improved psychological and physical health over time” (p. 120). Thus, the exploration of positive emotions as possible mediators to quality of life and benefit finding is intriguing and appropriate at this time with adolescent cancer survivors.

Positive Emotions and Health. Much research and theory has explored the use and effectiveness of positive emotions on both mental and physical health (Frankl, 1963; Seligman, 1998; Taylor, 1989; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). In her formulation of a cognitive adaptation theory, Taylor (1983) sought to understand how individuals could cope with a traumatic and potentially life-threatening event. In a study with breast cancer patients, researchers found that rather than simply getting back to normal levels of functioning, most of the women reported that their lives had changed, in some ways, for the better (Taylor, Lichtman, & Wood, 1984). Specifically, breast cancer patients spoke of how they reestablished priorities to make time for the activities that were most important to them; most notably social relationships such as those with family and friends to which they subsequently devoted most of their time and attention. One startling finding to this research indicated that some of the women's positive beliefs were illusory. For example, many women believed that they could personally control the cancer or had insisted that they had been cured when the medical records stated otherwise. Importantly, these positive illusory beliefs fell within the realm of normal mental health and were not associated with psychological distress (Taylor et al., 1984). Later review of these findings and the social cognition literature provided evidence that normal human perception is marked by three mild and robust positive illusions: self-enhancement, unrealistic optimism, and an exaggerated perception of personal control (Fiske & Taylor, 1991; Taylor & Brown, 1988; Taylor et al., 2000).

The above research set the stage for a renewed understanding of the role that emotional states play in the coping and adjustment process of physically ill patients.

Specifically, Folkman and Moskowitz (2000) asserted that a barrier to progress in our understanding of the coping literature has been the result of an almost exclusive emphasis on negative outcomes to stress over the past thirty years. As such, these authors suggested that positive affect be considered in future research on chronic stress and chronic illness (Folkman & Moskowitz, 2000). In addition, other researchers have focused on how positive affect could directly impact physical health, the immune system, motivate health-related behaviors, and elicit social support (Salovey, Rothman, Detweiler, & Steward, 2000). In sum, the most recent research on adjustment to chronic illnesses, such as cancer, is attempting to empirically prove what the Greek physician Hippocrates posited long ago, that positive emotions and healthy outcomes may be linked “through multiple pathways” (Salovey et al., 2000, p 110).

Seligman (2002) hypothesized that positive emotions are best classified within the context of three time perspectives: the past, present, and future. Specifically, he conjectured that the use of positive emotions for optimal functioning in a variety of life domains could be best explained as satisfaction with the past, optimism about the future, and happiness in the present (Seligman, 2002). In line with Zimbardo’s (2002) previously mentioned balanced temporal triad, Seligman (2002) emphasized that positive emotions within these three time frames are distinct and often not tightly linked, underscoring the importance of considering each within a complete analysis of positive emotions. Further, research on positive emotions has shown evidence of discriminant validity between life satisfaction, positive affect, negative affect, optimism, and self-esteem (Lucas, Diener, & Suh, 1996). As such, it appears that examining the role of positive emotions in the

adjustment process of adolescent cancer survivors is especially relevant within the context of their time perspective.

Positive Emotions and Cancer Survival. To date, there is a paucity of research that has addressed how satisfaction with the past and happiness in the present can impact cancer survivors. As such, future research, such as the current study, should attempt to fill in the knowledge gaps of how these positive emotions can assist cancer survivors' adjustment and physical well being. However, there is a wealth of research on how future-oriented optimism may impact the physical and psychosocial adjustment to chronic illness patients and cancer survivors.

There is an abundance of research that has correlated optimism with positive health outcomes in chronic illnesses such as AIDS and cancer (Taylor et al., 1992; Carver et al., 1993; Shulz et al., 1996; Rosenbaum, 2002). For example, men who tested seropositive for HIV and were more optimistic (as measured by the Life Orientation Test - Revised; LOT-R) that they would not develop AIDS, exhibited many areas of positive adaptation. This AIDS-specific optimism was related to higher perceived control, more active coping and adaptation styles, and more positive attitudes and health-promoting behaviors. Thus, the authors concluded that optimism is psychologically adaptive without compromising health behaviors (Taylor et al., 1992). Likewise, research with early stage breast cancer patients found that optimism was inversely related to distress by acting as a mediator to greater acceptance, less denial, and less behavioral disengagement as patients adapted to their cancer diagnosis, treatment, and survival. In short, optimists seemed to accept the things that they could not change and exerted effort to change the things that

they could change (Carver et al., 1993). Additionally, optimistic first year law students experienced better adaptation and improved immune functioning as a result of their optimistic nature (Segerstrom et al., 1998). That is, they experienced events as less stressful and exhibited less negative mood, such as anxiety and depression. This research exemplifies the stress-buffering effects of optimism on a variety of illnesses (Segerstrom et al., 1998; Seligman et al., 1995).

Important research has focused on the role of pessimism and how it relates to cancer mortality in patients of various ages (Shulz et al., 1996). While pessimism is not the mutually-exclusive “other side of the coin” of optimism, this research found strong associations between pessimism and mortality, but only for patients under 60. The authors indicated that a pessimistic orientation or explanatory style could be a risk factor for mortality for younger (30-59) cancer patients due to negative health behaviors, poor adherence to medical regimen, and pessimism’s affect on the immune system. Age-related differences in pessimism could be the result of cancer being more normative for older adults (60+) than young adults and also a normative adaptation style for older adults whereas, in younger adults, pessimism reflects a “genuine hopelessness and despair about the future” (Shulz, 1996, p.308). This finding accentuates the need for research in the young and under-studied population of adolescent cancer survivors. Finally, support programs for cancer survivors at the Mayo Clinic and Stanford University have emphasized the importance of an optimistic explanatory style as a predictor of longevity and quality of life in their patients (Maruta et al., 2000; Rosenbaum et al., 2002).

In sum, there is a substantial body of literature that points to optimism as a significant positive emotion and mediator to a variety of mental and physical health benefits. While it is incumbent on researchers to apply these findings to adolescent cancer survivors, it is equally important to expand our understanding of the impact of additional positive emotions, such as satisfaction with life and happiness, as potential mediators to improved quality of life and benefit finding within this population. To date, no research has incorporated satisfaction with life and happiness with optimism as potential mediators to adjustment in adolescent cancer survivors.

Specific Aims

Assessing quality of life (QOL) and benefit finding in adolescent cancer survivors is an under-researched area in the field of psycho-oncology. Additionally, time perspective and positive emotions are two potential sets of mediating psychosocial factors of interest in the adjustment process of adolescent cancer survivors. Specific aims of this study were to:

1. Assess QOL and benefit finding in the adolescent cancer survival experience in relation to demographic/medical variables (See Figure 2).
2. Evaluate potential mediator pathways to QOL and benefit finding, such as time perspective (past-negative, present-hedonistic, future, past-positive, and present-fatalistic) and positive emotions (satisfaction with life, happiness, and optimism).

Hypotheses:

Accordingly, the following hypotheses are offered (See Figure 2):

1. Medical and demographic variables (such as age, diagnosis, time since diagnosis, type and severity of treatment, etc) will be associated with adolescent cancer survivors' QOL and benefit finding (Robison et al., 2002; Zebrack et al., 2002).
2. Time perspective and positive emotions will be significant mediating variables to QOL and benefit finding in adolescent cancer survivors.

Diagnosis with cancer during adolescence taxes an individual's resources, as it would during any stage of life. Given the current need to empirically find and validate significant predictors and mediators of adjustment with adolescent cancer survivors, this study seeks to further examine the psychosocial aspects that affect quality of life and the ability to find benefit in their experience. By examining possible mediating psychosocial factors that could improve QOL and benefit finding, the overall goal of this research was

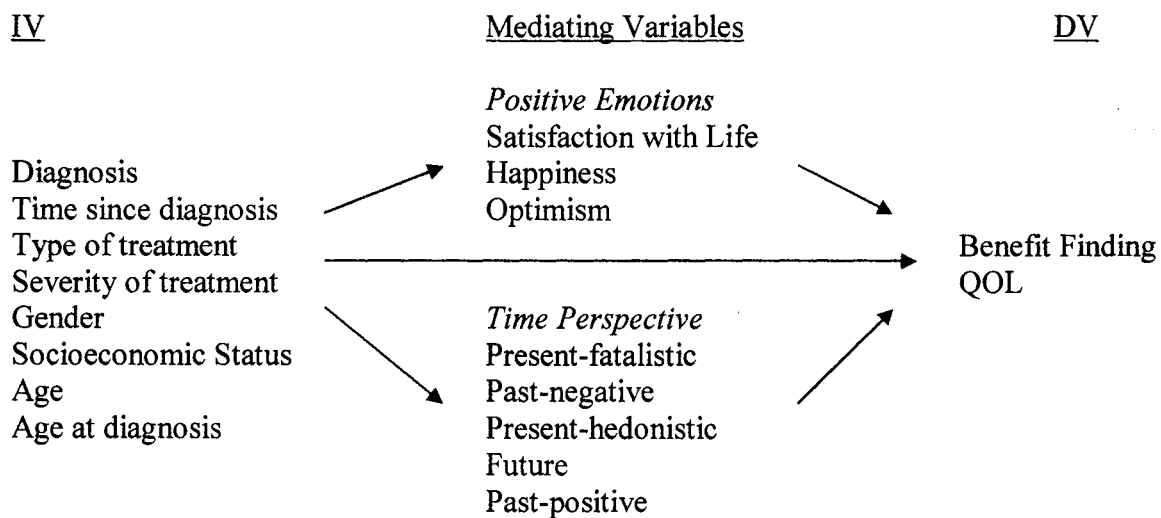


Figure 2. Overall Mediator Model.

to increase our understanding of positive psychosocial adjustment of adolescent cancer survivors. Understanding how time perspective and the use of positive emotions affect the quality of life and benefit finding of adolescent cancer survivors will extend the current research and knowledge of this understudied, yet growing population. Extending our knowledge of these psychosocial factors will be valuable in theory development and in creating and strengthening intervention strategies that improve the lives of adolescent cancer survivors.

Research Design

This within-groups study evaluates whether and to what extent time perspective and positive emotions mediate the relationship between medical/demographic factors and quality of life (QOL) and benefit finding in adolescent cancer survivors.

Objective: Study results will help determine: 1) whether medical/demographic factors are significantly associated with QOL and benefit finding of adolescent cancer survivors and, 2) whether time perspective and positive emotions mediate the relationship between medical/demographic factors and the QOL and benefit finding of adolescent cancer survivors.

Design: This study utilizes a cross-sectional survey design.

Participants: A priori analysis revealed that 84 participants are needed in order to obtain a power of .80 with a medium within-group effect size of .30 (Cohen & Cohen, 1983; alpha level = .05). Previous studies with similar goals have utilized samples ranging from 21 participants (Pendley et al., 1997) to 130 participants (Kazak et al., 1997), with the mode number of participants close to that seen in Stern et al. (N = 48,

1993). This study is designed to assess the psychosocial adjustment of adolescent cancer survivors who are still alive at least two years from the date of their diagnosis. As such, all participants must fulfill the following inclusion requirements: a) age at diagnosis between 10 years and 21 years; b) diagnosis date before June 1, 2002; c) between two and ten years post-diagnosis from cancer; d) alive two years from the date of diagnosis, regardless of disease or treatment status; and e) English speaking, due to the language of questionnaires (Zebrack et al., 2002).

Research Setting: Cancer surviving adolescents will be solicited from the Pediatric Hematology / Oncology division of the VCU Medical Center. The VCU Medical Center is a regional cancer facility that specializes in child and adolescent cancer treatment in the central region of Virginia. The Pediatric Hematology / Oncology division has approximately 75 newly diagnosed patients within the past year. Currently, the Pediatric Hematology / Oncology division has approximately 150 adolescent patients registered who are alive two years post-diagnosis.

Screening, Informed Consent and Assent procedures: Staff from the Pediatric Hematology / Oncology division at the VCU Medical Center will ascertain and register all eligible participants using a structured protocol ensuring that participants fit the inclusion criteria listed above. Once registered on a database, all eligible participants will be mailed an introductory letter describing the study and a postcard to return if they choose to participate. Upon receiving the return postcard, informed consent, child assent (if the participant is currently under 18 years of age), demographic and survey questionnaires will be mailed to the participant for their completion and return via mail

service. If the completed questionnaires are not received two weeks after the initial mailing, a postal reminder will be sent to the participant. No other postal contact will be initiated after this point. All participant information will be coded by an ID and the master ID list will be kept by the Pediatric Hematology / Oncology division staff. Additionally, Pediatric Hematology / Oncology division staff will approach potential participants during routine outpatient clinic visits and group outreach events, with special attention not to solicit participation from the same client twice via mail and/or clinic visit.

Method

Participants

All participants were initially identified from inpatient and outpatient records of a large Mid-Atlantic hospital within a division that focuses primarily on pediatric oncology. Eligibility requirements included the following criteria: (a) age at diagnosis between 10 years and 21 years; (b) diagnosis date before June 1, 2002; (c) between two and ten years post-diagnosis from cancer; (d) alive two years from the date of diagnosis, regardless of disease or treatment status; and (e) English speaking, due to the language of questionnaires (Zebrack et al., 2002). Potential participants with significant cognitive impairments were excluded from the study. The initial pool consisted of 153 potential participants in 2004, 50 of whom participated in the study (a 30.6% response rate). Participants were given a \$20 gift certificate to a national electronics company as reimbursement for their time.

Participant demographic and descriptive statistics are presented in Table 1. Many of the demographic and medical factors were classified into dichotomous variables, as outlined by previous multi-site studies with adolescent cancer survivors (Robison et al., 2002; Zebrack et al., 2002). Dichotomous coded variables included the following: gender (male & female), ethnicity (Caucasian & Non-Caucasian), in-school status (not in school & in school), marital status (single / other & married), and income (household income below \$ 60,000 & household income above \$60,000), and participation in psychotherapy (no therapy & participation in individual therapy, group therapy, or support group).

Table 1

Participant Demographics

| Variable | <i>M</i> | <i>SD</i> | <i>n</i> (%) |
|----------------------------------|----------|-----------|--------------|
| Gender ¹ | | | |
| Male | -- | -- | 25 (50%) |
| Female | -- | -- | 24 (48%) |
| Race | | | |
| Caucasian / White | -- | -- | 41 (82%) |
| Minority | -- | -- | 9 (18%) |
| In school status ¹ | | | |
| Yes | -- | -- | 38 (76%) |
| No | -- | -- | 11 (22%) |
| Marital status | | | |
| Single / other | -- | -- | 46 (92%) |
| Married | -- | -- | 4 (8%) |
| Education Completed ¹ | | | |
| High school graduate or less | -- | -- | 20 (40%) |
| Some college | -- | -- | 18 (36%) |
| College graduate or more | -- | -- | 10 (20%) |
| Age at diagnosis | 13.7 | 2.9 | -- |
| Age at time of study | 20.2 | 4.3 | -- |

| Variable | <i>M</i> | <i>SD</i> | <i>n</i> (%) |
|--------------------------------------|----------|-----------|--------------|
| Household income ^{<i>1</i>} | | | |
| Less than \$60,000 | -- | -- | 18 (36%) |
| More than \$60,000 | -- | -- | 29 (58%) |
| Diagnostic Categories | | | |
| Leukemia | -- | -- | 13 (26%) |
| Lymphoma | -- | -- | 19 (38%) |
| Other | -- | -- | 18 (36%) |
| Treatment Received | | | |
| One procedure ^{<i>a</i>} | -- | -- | 9 (18%) |
| Two procedures ^{<i>b</i>} | -- | -- | 27 (54%) |
| Three procedures ^{<i>c</i>} | -- | -- | 14 (28%) |
| Received any surgery | -- | -- | 27 (54%) |
| Received any chemotherapy | -- | -- | 47 (94%) |
| Received any radiation | -- | -- | 31 (62%) |
| Received bone marrow treatment | -- | -- | 6 (12%) |
| Had a relapse diagnosis | -- | -- | 9 (18%) |
| Received psychotherapy | -- | -- | 12 (24%) |

Note: *N* = 50. ^{*1*} = one or more participant(s) did not respond to item; ^{*a*} = either surgery, or chemotherapy, or radiation; ^{*b*} = any combination of two of the three procedures previously stated; ^{*c*} = patient received surgery, chemotherapy, and radiation.

Also in accordance with previous research (Robison et al., Zebrack et al., 2002), several variables were recoded into ordinal data for correlational analyses. These included: education level (coded: 1 = some high school, 2 = some college, 3 = college graduate and beyond), diagnosis categories (coded: 1 = all forms of leukemia, 2 = all forms of lymphoma, 3 = other; including all forms of brain, bone, and soft tissue tumors), and treatment received (coded: 1 = one procedure [either surgery, or chemotherapy, or radiation], 2 = two procedures [any combination of two of the three procedures previously stated], 3 = three procedures [patient received surgery, chemotherapy, and radiation]). For regression analyses, diagnostic categories were further dummy coded into yes/no dichotomous variables. For example, having been diagnosed with leukemia (0 = no, 1 = yes) and diagnosed with lymphoma (0 = no, 1 = yes) were entered into the regression equation to determine if any of the diagnostic categories were significant predictors of mediator or outcome variables. Finally, age at diagnosis, age at time of study, months since diagnosis, and months since treatment ended were all kept as continuous variables in data analyses.

A total of 12 participants (24%) reported having received “any type of psychological talk therapy” since their diagnosis, 9 participants (18%) reported having had a relapse diagnosis of cancer since their original diagnosis, and 4 participants (8%) reported a brain tumor diagnosis. Age at diagnosis ranged from 10 to 21 years and age at time of study ranged from 12 to 31 years.

Data Collection Procedures

Researchers identified a sample of all patients who were between two and ten years post-diagnosis from cancer and were between the ages of 10 and 21 at the time of their diagnosis. They reviewed patient records for exclusionary criteria (e.g. specific neurological and/or cognitive impairments) and sent an introductory letter and return postcard to all eligible participants. Upon receiving the return postcard, an introduction letter, demographic, and survey questionnaires were mailed to the participant for their completion and returned via mail service. All correspondence to patients currently under the age of 18 was mailed to their parents, asking them to review all material and discuss the content with their child. If the completed questionnaires were not received two weeks after the initial mailing, a postal reminder was sent to the participant. No other postal contact was initiated after this point. Eight adult participants were elicited from a clinic outreach program (i.e. cancer survivors ski trip weekend). Upon receiving the completed packet, a \$20 gift card and thank you note was sent to each participant.

Instruments

See the Appendix for a copy of the questionnaire packet.

Demographics: A standardized demographics survey was utilized. The survey assessed: gender, race/ethnicity, type of cancer diagnosis, age at diagnosis, time since diagnosis, treatment type and duration, time from the completion of treatment, age at current evaluation, SES status (via estimated family income), relapse status, marital status, whether living alone, education completed, employment status, and previous group/individual therapy.

Pediatric Health-Related Quality of Life (PedsQL4.0): The PedsQL uses a modular approach to health-related quality of life (HRQOL) measurement designed by Varni et al. (1999, 2001) with versions available for both children and adolescents. The measure provides an opportunity to assess the child's unique perspective on how cancer affects his or her daily life. The PedsQL consists of a core set of 23 generic items designed to assess physical, emotional, social and school functioning, followed by a set of 27 disease-specific items targeted to pediatric cancer. The benefit of using this approach is that the generic scales allow for cross-condition comparisons, whereas the disease-specific modules enhance sensitivity to the adolescent cancer experience. As such, quality of life scores are available for a general module, a cancer-specific module, and a combined total score module. Reliability is estimated at .83 for adolescent patients. The PedsQL is deemed to be more age appropriate for adolescents than the popular Rand-36 often used in cancer research (Varni et al., 2001).

Benefit Finding: Participants completed a similar benefit finding scale used in Antoni et al. (2001) study of breast cancer survivors. The measure consisted of 17 items with the common stem, "Having cancer as an adolescent has..." and the item expresses some potential benefit that might be derived from the experience. Responses were made on a 5-point Likert scale, ranging from "not at all" (1) to "extremely" (5), and assessed a variety of domains, including: acceptance of life's imperfections, becoming more cognizant of the role of other people in one's life, and developing a sense of purpose in life. A mean total score (ranging from 1 - 5) is conducted for each participant. Although the measure tapped into various domains, previous research and factor analysis suggest

that the measure is appropriately used as a unitary scale. Internal reliability of the item set for breast cancer patients averaged .95 (Antoni et al., 2001). This measure has also shown strong convergent and discriminant validity (Boyers et al., 2000).

Satisfaction with Life Scale: The Satisfaction with Life Scale measures global perceptions of subjective well-being that past life experiences have been fulfilling, meaningful, and pleasant (Diener, 1999; Diener et al., 1985). This self-report 5-item measure asked participants to rate each item on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The five items are totaled for an overall score. This measure has been used extensively and reports very strong validity and reliability psychometric properties across populations (Diener, 2000). Specifically, internal reliability for the measure has been strong (coefficient alpha = .87) with moderate temporal stability (2-month test-retest stability coefficient = .82; Pavot & Diener, 1993).

Subjective Happiness Scale (SHS): The SHS is a 4-item scale of global subjective happiness in the present moment (Lyubomirsky & Lepper, 1999). Two items asked respondents to characterize themselves using both absolute ratings and ratings relative to peers, whereas the other two items offer brief descriptions of happy and unhappy people and asked the participant to what extent each characterizes them. Responses to the four items were combined and averaged to provide a single continuous composite score, ranging from 1 to 7. The SHS has been utilized across a variety of populations, ages, and cultures and results have indicated that it has high internal consistency across samples (Cronbach's alphas range from .85 to .95 in 8 different studies). Test-retest and self-peer correlations have suggested good to excellent reliability (Pearson's $r = .90$ for four weeks

and .71 for three months; correlation with informant ratings, $r = .65$), and construct validation studies of convergent and discriminant validity have confirmed the use of this scale to measure the construct of subjective happiness (Lyubomirsky, 2001; Lyubomirsky & Lepper, 1999).

Life Orientation Test - Revised (LOT-R): The personality variable of dispositional optimism was measured by the LOT-R (Scheier & Carver, 1985, 1992). The LOT-R measures global expectations that good things will be plentiful in the future and bad things will be scarce. The LOT-R consists of 10 items (with 4 filler items). Three of the six scored items are positively valenced and three items are negatively valenced, thus requiring reverse scoring. The six items are added to achieve a single score of dispositional optimism. Cronbach's alpha coefficients for the LOT-R have been reported between 0.72 and 0.85 with average test-retest reliability coefficients = .79 (Scheier & Carver, 1992; Schulz et al, 1996).

Zimbardo Time Perspective Inventory (ZTPI): All aspects of time perspective were measured with the ZTPI (Zimbardo & Boyd, 1999). This self-report 56-item measurement instrument yields scores for time perspective within five distinct factors: past-negative (an aversive view of the past), present-hedonistic (enjoyment and pleasure of the present), future (planning for and achievement of future goals), past-positive (a warm and sentimental attitude toward the past), and present-fatalistic (a diffuse and hopeless attitude toward the future and life). Participants are asked to indicate how characteristic a statement is of them on a 5-point Likert scale ranging from very uncharacteristic (1) to very characteristic (5). For each scale, a mean total score is

computed. Cronbach's alphas in previous studies have been reported at .82, .79, .77, .80, and .74, for past-negative, present-hedonistic, future, past-positive, and present-fatalistic, respectively. Test-retest reliabilities of the five subscales have been established by previous research ranging from .70 to .80 (Zimbardo & Boyd, 1999).

Statistical Analyses

Main variables of interest included: medical/demographic factors, quality of life (QOL), benefit finding, time perspective, and positive emotions of adolescent cancer survivors. Descriptive statistics were first computed and tabled. All variables were examined for co-linearity and violations to normality. In addition, preliminary analyses of each set of mediator variables (positive emotions and time perspective) were then conducted to ensure that each variable within the set accounts for a separate latent construct. Outcome variables were then inspected to look for differences in mode of implementation (mail vs. in person), bone marrow treatment, and whether or not the participant has had a cancer diagnosis relapse since their original diagnosis. If differences exist, the mode and/or type of treatment and relapse would be adjusted for in the analysis. Major statistical analyses were conducted for each specific aim as follows:

Aim #1: Data were analyzed via multiple regression tests to highlight significant correlations between medical/demographic variables and QOL and benefit finding.

Aim #2: A series of multiple regression tests were conducted in accordance with the data analytic procedures outlined by Baron and Kenny (1986) for testing mediated models. Time perspective (past-negative, present-hedonistic, future, past-positive, and present fatalistic) and positive emotions (satisfaction with life, happiness, and optimism)

were each evaluated as potential mediators of medical/demographic (predictor) variables to QOL and benefit finding (criterion variables).

Testing the model involves several steps whereby the medical/demographic variables (predictors) are first expected to be related to quality of life and benefit finding (criterion variables). Second, the predictor variables are expected to be related to the mediating variables (time perspectives and positive emotions). Third, the mediating variables are expected to significantly account for variations in the two criterion variables of quality of life and benefit finding. Finally, the relationship between the medical/demographic factors and the criterion variables of quality of life and benefit finding will decrease when controlling for the mediating variables of time perspective and positive emotions (Baron & Kenny, 1986).

Predicted Results:

Aim #1: Demographic/medical factors will be associated with QOL and benefit finding in adolescent cancer survivors. For example, it is predicted that type of diagnosis (i.e. leukemia, Hodgkin's disease, and non-Hodgkin's lymphoma, etc.) and severity of treatment (chemotherapy, radiation, surgery, or combinations thereof, etc) would each show significant differences when compared to patient QOL and benefit finding (Zebrack et al., 2002).

Aim #2: Time perspective and positive emotions will be significant mediator variables between demographic/medical and QOL and benefit finding in adolescent cancer survivors via mediational pathways as outlined by Baron and Kenny (1986).

Results

Preliminary Analyses

The dependent variables were first inspected for outliers and normality. Of the 51 original participants, one participant was a significant outlier for both quality of life and benefit finding. Telephone communication with the mother of this participant confirmed that she had cognitive difficulties that may have hampered her ability to answer all items fully. This participant was deleted from all further analyses, thus resulting in a total of 50 participants and normality of the data. Independent sample t-tests were conducted to test for significant group differences for those participants elicited via mail and in-person, receiving bone marrow treatment, and having relapsed since initial diagnosis. The results indicated that no significant differences were present regarding data collection procedure for quality of life, $t(47) = -0.378, p = .71$, and benefit finding, $t(48) = -0.271, p = .79$. Also, no significant differences were present for receiving bone marrow treatment for quality of life, $t(47) = .432, p = .67$, and benefit finding, $t(48) = -1.01, p = .32$. However, significant differences were present for relapse diagnosis status for quality of life, $t(47) = 2.25, p = .03$, yet no significant group differences were found for benefit finding, $t(48) = 1.31, p = .20$. Therefore, all participants were considered together for future analyses except for quality of life analyses where relapse diagnosis was entered as a covariate.

Descriptive statistics and Cronbach's coefficient alpha for dependent and mediator variables are presented in Table 2. All scales exhibited robust internal reliability (Cronbach's alpha ranging from .74 - .95), thus highlighting their utility and statistical strength that is consistent with previous research. Although many of these instruments

Table 2

Descriptive Statistics for Dependent and Mediator Variables

| Variable | <i>n</i> | <i>M</i> | <i>SD</i> | α |
|------------------------|----------|----------|-----------|----------|
| Quality of Life | | | | |
| General | 50 | 81.72 | 15.28 | .92 |
| Cancer-specific | 49 | 80.37 | 15.01 | .92 |
| Total | 49 | 81.03 | 14.20 | .95 |
| Benefit Finding | 50 | 3.68 | .80 | .90 |
| Depression | 48 | 10.31 | 8.18 | .86 |
| Satisfaction with Life | 50 | 25.40 | 6.29 | .85 |
| Subjective Happiness | 50 | 5.27 | 1.19 | .86 |
| Optimism (LOT-R) | 49 | 15.90 | 4.55 | .84 |
| Past-negative TP | 48 | 2.69 | .74 | .83 |
| Present-hedonistic TP | 46 | 3.69 | .47 | .77 |
| Future TP | 48 | 3.14 | .59 | .82 |
| Past-positive TP | 48 | 3.55 | .61 | .74 |
| Present-fatalistic TP | 48 | 2.58 | .72 | .81 |

Note. LOT-R = Life Orientation Test – Revised; TP = time perspective. α = Cronbach's alpha.

have not been previously utilized with adolescent cancer survivors, their comparisons to normative data and related populations are presented below.

Mean scores for quality of life (scores can range from 0 – 100, with higher scores meaning more quality of life) were similar to that reported by Varni et al. (2002) for healthy children / adolescents (General QOL, $M = 83.00$, $SD = 14.79$) and somewhat higher than those found for child / adolescent cancer survivors (General QOL, $M = 72.20$, $SD = 16.38$; Cancer QOL, $M = 73.46$, $SD = 24.78$; Total QOL, $M = 72.83$, $SD = 19.92$). Although Varni's (2002) large sample was similar to the current sample in diagnostic categories and the absence of other developmental disorders, it was different in two major areas. First, Varni's (2002) sample consisted of patients both on and off active treatment for their disease (54% and 46%, respectively). Second, Varni's (2002) sample ranged from 2 – 18 years of age ($M = 12$ years). Therefore, direct comparison of the data is not appropriate and highlights the dearth of research with this instrument aimed at adolescent cancer survivors' quality of life. From this point forward, analyses for quality of life were conducted with the Total QOL scores for clarity and to fully incorporate all aspects of participant quality of life. Mean scores for benefit finding were consistent with those found in women surviving breast cancer nine months post-treatment ($M = 3.47$, $SD = 0.95$; Antoni et al., 2001). No previous literature or data is available for benefit finding with adolescents surviving cancer.

Mean scores for satisfaction with life were similar to those reported for American university students ($M = 23.20$, $SD = 6.50$; Matheny et al., 2002) and disabled students ($M = 24.30$, $SD = 7.40$; Allman, 1990). Means scores for subjective happiness were

similar to those reported by Lyubomirsky and Lepper (1999) for American public university students ($M = 5.07$, $SD = 1.14$) and American high school students ($M = 5.13$, $SD = 0.98$). Mean scores for optimism were similar to breast cancer survivors in one study ($M = 16.0$, $SD = 4.4$; Trunzo & Pinto, 2003), but markedly lower than another recent study of breast cancer survivors ($M = 24.02$, $SD = 3.81$; McGregor, 2004). Therefore, the current sample appears as happy and satisfied with life as their healthy peers but less optimistic than adult breast cancer survivors.

Similar to previous research on positive emotions with adolescent cancer survivors, only normative data taken from university student samples is available for time perspective scores. Current scores for all time perspective factors are similar to those found in a large sample of university students, including: past-negative ($M = 2.98$, $SD = 0.72$), present-hedonistic ($M = 3.44$, $SD = 0.51$), future ($M = 3.47$, $SD = 0.54$), past-positive ($M = 3.71$, $SD = 0.64$), and present-fatalistic ($M = 2.37$, $SD = 0.60$; Zimbardo & Boyd, 1999).

In sum, the mean scores for all dependent and mediator variables indicates that the current sample of adolescent cancer survivors scored markedly higher than similar samples (other child / adolescent cancer survivors) in areas of quality of life, mildly higher than similar samples (university students) in satisfaction with life, and mildly lower than related samples (breast cancer survivors) in optimism. Current scores for benefit finding are similar to those found in a related sample of breast cancer survivors and in-line with university students in the areas of subjective happiness and all time perspective factors. Overall, the current sample of adolescent cancer survivors appears to

be functioning quite well in all areas except for optimism. These findings are in line with previous research that has maintained that most survivors adjust quite well, in general, to their medical condition with some participants having moderate difficulties (Kazak, 2005; Patenaude & Kupst, 2005; Zebrack et al., 2002).

Correlations among Variables

Table 3 shows the Pearson product-moment correlations for all independent / predictor variables (demographic and medical variables), mediator variables (positive emotions and time perspectives), and the two outcome measures (quality of life and benefit finding). Of all demographic and medical variables, only gender, number of treatments received for cancer, and participation in psychotherapy were significantly associated with quality of life in the directions hypothesized. For example, being a female, a higher number of treatments received for cancer, and prior participating in psychotherapy all related to lower scores on quality of life. This finding is in agreement with Zebrack et al. (2002) who found that gender, socioeconomic status, and type of treatment received were the only significant predictors of adjustment in a large sample of adolescent cancer survivors and sibling controls. Finally, dummy coded diagnostic categories (i.e. yes/no categories for leukemia and lymphoma) were neither significantly correlated with nor significant predictors of mediator or outcome variables. As such, they were excluded from future analyses.

No demographic or medical variables were significantly correlated with benefit finding. While this finding may, at first glance, appear problematic, it is in line with Thorton's (2002) assertion that benefit finding in cancer patients appears to operate

Table 3

Correlation Matrix of All Variables Utilized in Study.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------------------------|-------|-------|------|------|-------|-------|------|-------|------|-----|-------|----|
| 1. Age at study | -- | | | | | | | | | | | |
| 2. Age at diagnosis | .53** | -- | | | | | | | | | | |
| 3. Gender | .07 | -.22 | -- | | | | | | | | | |
| 4. Ethnicity | -.01 | .05 | .10 | -- | | | | | | | | |
| 5. Marital status | .46** | .16 | .21 | .16 | -- | | | | | | | |
| 6. Education completed | .69** | .51** | .01 | .08 | .18 | -- | | | | | | |
| 7. Household income | -.31* | -.23 | .25 | -.01 | -.01 | -.18 | -- | | | | | |
| 8. Diagnosis category | -.15 | .15 | -.21 | .13 | -.04 | -.04 | -.01 | -- | | | | |
| 9. Treatment received | -.21 | -.04 | .27 | .07 | -.05 | -.17 | .06 | .25 | -- | | | |
| 10. Psychotherapy | .15 | -.05 | .30* | .02 | .28* | -.03 | -.04 | -.13 | .13 | -- | | |
| 11. Months since dx | .60** | -.28 | .33* | -.09 | .21 | .32* | -.04 | -.36* | -.17 | .11 | -- | |
| 12. Months since tx end | .74** | -.10 | .22 | -.06 | .46** | .42** | -.16 | -.19 | -.25 | .16 | .85** | -- |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------------------------|------|------|--------|------|------|------|------|------|--------|--------|------|------|
| 13. Satisfaction with life | -.11 | -.06 | -.35 | -.07 | -.14 | -.07 | -.23 | -.06 | -.34* | -.40** | -.06 | -.04 |
| 14. Happiness | -.09 | -.06 | -.22 | -.09 | -.10 | -.05 | .02 | .06 | -.44** | -.37** | -.04 | -.01 |
| 15. Optimism | .02 | .07 | -.08 | -.23 | -.14 | .09 | .06 | -.03 | -.33* | -.27 | -.03 | -.04 |
| 16. Past-negative TP | .20 | -.10 | .35* | .06 | .03 | .03 | -.16 | -.01 | .26 | .48* | .24 | .27 |
| 17. Present-hedonistic TP | -.12 | .07 | .03 | .14 | -.20 | -.18 | -.07 | .07 | .30* | -.07 | -.13 | -.16 |
| 18. Future TP | .22 | -.01 | .27 | -.26 | .14 | .01 | .08 | -.15 | .00 | .27 | .24 | -.21 |
| 19. Past-positive TP | .18 | .26 | -.04 | .08 | .10 | .13 | -.06 | .13 | -.20 | -.32* | .01 | .07 |
| 20. Present-fatalistic TP | -.01 | .20 | .09 | .20 | -.09 | -.10 | -.27 | .20 | .32* | .03 | -.17 | -.16 |
| 21. Benefit finding | .13 | -.03 | .05 | -.26 | .07 | -.01 | -.16 | -.90 | -.08 | -.01 | .18 | .21 |
| 22. General QOL | .02 | -.03 | -.35* | -.05 | -.28 | .14 | -.18 | .04 | -.35* | -.67** | .10 | .05 |
| 23. Cancer QOL | .09 | .06 | -.47** | -.13 | -.02 | .22 | -.24 | -.05 | -.46** | -.42** | .07 | .13 |
| 24. Total QOL | .06 | .03 | -.45** | -.11 | -.15 | .20 | -.23 | -.01 | -.44** | -.58** | .09 | .10 |

| | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|----------------------------|--------|--------|--------|--------|--------|--------|-------|-------|-----|-------|-------|-----|
| 13. Satisfaction with life | --- | | | | | | | | | | | |
| 14. Happiness | .74** | --- | | | | | | | | | | |
| 15. Optimism | .55** | .76** | --- | | | | | | | | | |
| 16. Past-negative TP | -.63** | -.61** | -.55** | --- | | | | | | | | |
| 17. Present-hedonistic TP | .04 | -.15 | -.16 | .05 | --- | | | | | | | |
| 18. Future TP | -.21 | .05 | .30* | .12 | -.39** | --- | | | | | | |
| 19. Past-positive TP | .46** | .52** | .48** | -.44** | -.09 | .21 | --- | | | | | |
| 20. Present-fatalistic TP | -.10 | -.31* | -.34* | .34* | .61** | -.43** | -.25 | --- | | | | |
| 21. Benefit finding | .38** | .41** | .40** | -.14 | -.03 | .34* | .43** | -.22 | --- | | | |
| 22. General QOL | .64** | .69** | .55** | -.52** | -.18 | -.11 | .44** | -.25 | .14 | --- | | |
| 23. Cancer QOL | .57** | .51** | .46** | -.52** | -.15 | -.12 | .26 | -.30* | .25 | .74** | --- | |
| 24. Total QOL | .64** | .63** | .55** | -.56** | -.17 | -.12 | .37* | -.30* | .21 | .92** | .94** | --- |

* $p < .05$. ** $p < .01$.

independently from demographic and medical variables. Thus, primary statistical analyses included the use of gender, treatment received, and participation in psychotherapy as predictor / independent variables in the mediation models with quality of life and benefit finding.

Preliminary Analyses of Mediator Variables

Cohen and Cohen (1983) noted that, “A frequent dilemma of the investigator in behavioral science arises in regard to the number of variables he will employ in a given investigation” (p. 169). For example, the more variables utilized, and thus more hypotheses tested, results have a greater probability to incur investigation-wise Type I error. Type I error, in general, occurs when investigators find significant results when they are not present. This dilemma also relates to Type II error, when investigators fail to find significant results that may be present. To address these issues, Cohen and Cohen (1983) suggested a “less is more” approach, where variables and hypotheses should be reduced when appropriate to strive for “more statistical test validity, more power, and more clarity in the meaning of results” (p. 171). This approach was deemed to be especially necessary in the current study because of the relatively small size of the sample ($n = 50$). Therefore, the correlations between the two sets of mediator variables (positive emotions and time perspectives) were inspected and then exploratory factor analyses were conducted to ensure that each variable added uniquely to the initial model. Modifications to the variables were made based on these exploratory analyses and are described in the following sections.

Preliminary Analyses of Positive Emotions

Table 3 highlights the strong positive correlations found between each positive emotion scale with one another. For example, satisfaction with life is highly correlated with happiness ($r = .736, p < .001$) and optimism ($r = .549, p < .001$). In addition, happiness is highly correlated with optimism ($r = .762, p < .001$). These results raise the question of multicollinearity, which occurs when variables in an analysis are highly correlated with one another. In such situations, Cohen and Cohen (1983) suggest the researcher consider potential causal reasons for such an association. With the current variables assessing positive emotions, there is reason to believe they may be assessing a similar latent variable. Therefore, conducting exploratory factor analyses on the three scales of positive emotions was deemed appropriate.

Principal components exploratory factor analyses with Varimax rotation were conducted for each scale of the three positive emotions (satisfaction with life, happiness, and optimism). These analyses were conducted to ensure that each scale accounted for a unique factor, as initially proposed. Exploratory factor analyses with each scale of positive emotions found that the all three scales would best be described as a one factor model. The results indicated that all three scales loaded on one factor (eigen = 2.37, percent variance = 79.04). An examination of the scree plot indicated that the two remaining possible factors had insufficient eigen values (eigen = .45 & .18, respectively). As such, it was determined that combining all three scales into one index variable of positive emotions was the most parsimonious use of the data. This decision is in contrast to the assertions of discriminant validity between the constructs of life satisfaction,

positive affect, negative affect, optimism, and self-esteem (Lucas, Diener, & Suh, 1996). However, this decision is supported by Lyubomirsky and Lepper's (1999) finding that happiness and optimism are strongly correlated with one another (r s ranging from .47 to .62 in four studies). Overall, our decision is in-line with current literature on positive emotions that indicated how self-report measures may often "blur the distinctions among positive emotions and other closely related affective states" (Fredrickson, 2002; p. 121). Therefore, all future analyses were conducted using a mean score of all positive emotions into an index score. The newly created Positive Emotions Index Scale was produced by summing each of the three positive emotion scales and dividing by three to achieve a total mean score.

Preliminary Analyses of Time Perspective

In keeping with Cohen and Cohen's (1983) guidance to clarify and reduce the number of variables when appropriate, all five factors of time perspective were inspected for significant relationships to one another. Table 3 shows that both factors of a past time orientation are correlated with one another in a negative direction ($r = -.444$, $p = .002$). Also, both forms of a present time orientation are positively correlated with one another ($r = .611$, $p < .001$) and a future time perspective correlated significantly with both present-hedonistic ($r = .389$, $p = .008$) and present-fatalistic ($r = -.428$, $p = .002$) time perspectives. Although these strong associations do not raise the question of multicollinearity, they do indicate that exploratory factor analyses are appropriate to ensure that each of the five time perspectives addresses a unique factor as predicted by the initial model.

Principal components exploratory factor analyses with Varimax rotation on each of the five original scales of time perspective found a strong indication for a two factor model. The results indicated that all five time perspective scales loaded on two factors (Factor 1: eigen = 2.11, percent variance = 42.19; Factor 2: eigen = 1.36, percent variance = 27.25; cumulative percent variance = 69.44). An examination of the scree plot indicated that the three remaining possible factors had insufficient eigen values (each < 1). Most important, perhaps, is the fact that the factor analyses are in line with the theoretical model of time perspective. The results indicated that Factor 1 was composed of both present time orientations and future orientation (inversely related). Factor 2 was composed of both past time orientations (with past-positive being inversely related to past-negative). Given the statistical and theoretical match of these results, it was determined that creating a Past-Negative and Present-Focused scale was the most parsimonious use of the data. The Past-Negative scale was created by combining the original past-negative scale with a reverse-scored version of the original past-positive scale. Similarly, the Present-Focused scale was created by combining the original present-hedonistic and present-fatalistic scales along with a reverse-scored version of the original future time perspective scale.

There is both statistical and theoretical precedence in examining the best use of this time perspective scale. Although the creators of this relatively new scale have shown strong statistical properties (Zimbardo & Boyd, 1999), more recent research has urged the ongoing evaluation of its hypothesized factors (Lennings, 2000). Theoretically, it may be very important to consider its factor structure since this is one of few studies where the

scale has been used with early to middle adolescents. These issues, in conjunction with Cohen and Cohen's remarks, highlight that the current modification of the time perspective inventory is theoretically appropriate and statistically sound.

Summary of Preliminary Analyses

Table 4 shows the updated descriptive statistics and correlations between all predictor, mediator indexes, and outcome variables. These findings indicate that an updated power analyses is appropriate. Since this set of variables had never been used with one another, the investigator assumed a moderate effect size of .30 among the variables that resulted in needing a sample size of 84 to achieve a power of .80 (Cohen & Cohen, 1983). Given the updated effect sizes reported in Table 6 between predictor, mediators, and outcome variables (significant correlations ranged .39 - .68), the investigator was now able to conservatively state that an average effect size of .40 was found among all variables. As such, the updated power analysis indicated that a sample size of 46 participants was now needed to achieve a power of .80 (Cohen & Cohen, 1983). This finding gives us added justification to suggest that the current sample size ($n = 50$) may have been appropriate to detect effects. Future research with larger sample sizes is expected to help confirm these assumptions. The Statistical Package for Social Sciences (SPSS, Version 13.0) was used for all analyses and a significance level of $\leq .05$ was used for all two-tailed testing.

Primary Analyses

Mediation analysis was conducted via multiple linear regressions according to the method described by Baron and Kenny (1986). In the social sciences, mediators explain

Table 4

Revised Correlation Matrix and Descriptive Statistics for Positive Emotions and Time Perspective Indices.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-----------------------|--------|--------|--------|--------|--------|------|-------|-----|
| 1. Gender | --- | | | | | | | |
| 2. Treatment Received | .27 | --- | | | | | | |
| 3. Psychotherapy | .30* | .13 | --- | | | | | |
| 4. Positive Emotions | -.26 | -.41** | -.39** | --- | | | | |
| 5. Past-negative | .24 | .27 | .48** | -.72** | --- | | | |
| 6. Present-focused | -.08 | .32* | -.13 | -.14 | -.19 | --- | | |
| 7. Quality of Life | -.45** | -.44** | -.58** | .68** | -.55** | -.15 | --- | |
| 8. Benefit Finding | .05 | -.08 | -.01 | .45** | -.32* | -.23 | .21 | --- |
| <i>M</i> = | -- | -- | -- | 20.76 | 2.69 | 2.45 | 81.03 | 3.7 |
| <i>SD</i> = | -- | -- | -- | 4.64 | .74 | .61 | 14.2 | .80 |
| α = | -- | -- | -- | .92 | .81 | .85 | .95 | .90 |

Positive Emotions = Positive Emotions Index scale. Past-negative = past-negative time perspective index scale. Present-focused = present-focused time perspective index scale. Quality of life = Total quality of life score.

* = Correlation is significant at the 0.05 level (2-tailed). ** = Correlation is significant at the 0.01 level (2-tailed). α = Cronbach's alpha.

how external physical events take on internal psychological significance (Baron and Kenny, 1986). For example, previous psycho-oncology literature has focused on how demographic and medical factors impact patient's quality of life. The current study employs a mediator model to this prior research by inserting potential mediating variables (i.e. positive emotions and time perspective) as possible salient factors that affect the previous linear assumptions of demographic / medical variables to quality of life (and benefit finding). As such, the following analyses will be split into two models; one testing the mediator effects of positive emotions on quality of life and benefit finding and a second model testing the mediator effects of time perspective on quality of life and benefit finding.

Model 1: Positive Emotions

According to the methodology of Baron and Kenny (1986), the Positive Emotions Index scale was hypothesized to function as a mediator between the independent variables (gender, number of treatments received, and prior participation in psychotherapy) and the dependent variables (quality of life and benefit finding). See Figure 3.

To test for mediation with multiple regression techniques, the following conditions need to be met for Model 1 (Baron & Kenny, 1986):

1. Variations in gender, treatment received, and psychotherapy account for significant variations in quality of life and benefit finding.
2. Variations in gender, treatment received, and psychotherapy account for significant variations in positive emotions.

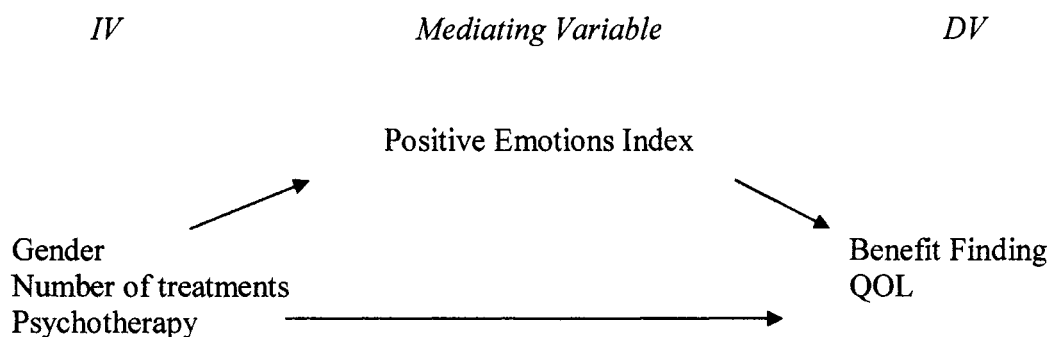


Figure 3. Positive Emotions Model.

3. Variations in positive emotions account for significant variations in quality of life and benefit finding.
4. When positive emotions are controlled, the significant relationships among gender, treatment received, and psychotherapy with quality of life and benefit finding are reduced or no longer significant.

As noted in condition four above, statistical mediation occurs when the mediator either reduces (“partial mediation”) or eliminates (“full mediation”) the significant relationship(s) between the demographic/medical variables and outcome variables (quality of life and benefit finding; Baron & Kenny, p. 1176). Partial mediation is a “realistic goal” in the social sciences given the multiple causes of the complex events being studied (i.e. quality of life; Baron & Kenny, p. 1176)

Summary of Condition #1:

When quality of life was regressed on each predictor variable alone, the relationships were significant (gender $p = .001$; treatment received $p = .002$; psychotherapy $p = .001$), thus meeting the first criterion for mediation. When quality of

life was regressed on gender, treatment received, and psychotherapy in one equation (Table 5, section 1), treatment received and psychotherapy continued to meet the first criterion for mediation ($p = .005$ & $.001$, respectively) while gender did not ($p = .061$). In summary, the more treatments received for cancer and having been involved in psychotherapy were significantly associated with lower quality of life scores.

When benefit finding was regressed on each predictor variable alone, all relationships were non-significant (gender $p = .732$; treatment received $p = .60$; psychotherapy $p = .966$). As such, the first criterion for mediation with benefit finding was not met. When benefit finding was regressed on gender, treatment received, and psychotherapy in one equation (Table 5, section 2), all three predictors continued to be non-significant. Thus, no predictor variable met the first criterion for mediation with benefit finding.

Summary of Condition #2:

When the Positive Emotions Index was regressed on gender, treatment received, and psychotherapy alone, the relationship was non-significant for gender ($p = .075$) and significant for treatments received ($p = .003$) and psychotherapy ($p = .005$). When the Positive Emotions Index was regressed on gender, treatment received, and psychotherapy in one equation (Table 5, section 3), the relationship with gender remained non-significant ($p = .635$), whereas treatment received ($p = .01$) and psychotherapy ($p = .015$) remained significant. Thus, treatment received and psychotherapy met the second criterion for mediation. In summary, the more treatments received for cancer and having

Table 5

Positive Emotions Index as a Mediating Variable Between Gender, Treatment Received, and Psychotherapy and Outcome Variables: Quality of Life and Benefit Finding.

| Dependent Variable | Independent Variable | Partial r^2 | p |
|----------------------|----------------------|---------------|------|
| 1. Quality of Life | Gender | .077 | .061 |
| | Treatment Received | .164 | .005 |
| | Psychotherapy | .291 | .000 |
| 2. Benefit Finding | Gender | .005 | .624 |
| | Treatment Received | .008 | .543 |
| | Psychotherapy | .000 | .951 |
| 3. Positive Emotions | Gender | .005 | .636 |
| | Treatment Received | .143 | .010 |
| | Psychotherapy | .127 | .015 |
| 4. Quality of Life | Positive Emotions | .468 | .000 |
| 5. Benefit Finding | Positive Emotions | .199 | .001 |
| 6. Quality of Life | Positive Emotions | .272 | .000 |
| | Gender | .079 | .061 |
| | Treatment Received | .058 | .110 |
| | Psychotherapy | .191 | .003 |
| 7. Benefit Finding | Positive Emotions | .263 | .000 |
| | Gender | .016 | .399 |
| | Treatment Received | .015 | .410 |

| Dependent Variable | Independent Variable | Partial r^2 | p |
|----------------------------|----------------------|---------------|------|
| 7. Benefit Finding (cont.) | Psychotherapy | .040 | .188 |

been involved in psychotherapy were significantly associated with lower scores on positive emotions.

Summary of Condition #3:

When quality of life was regressed on the Positive Emotions Index, the results indicated that positive emotions were a significant predictor of quality of life in a positive direction ($p < .001$; Table 5, section 4). When benefit finding was regressed on the positive emotion index, the results indicated that positive emotions were a significant predictor of benefit finding in a positive direction ($p = .001$; Table 5, section 5). Thus, the third criterion for mediation was met by both quality of life and benefit finding. In summary, higher scores on the Positive Emotions Index were significantly associated with higher scores on both quality of life and benefit finding.

Summary of Condition #4:

Finally, quality of life was regressed on the mediator variable (Positive Emotions Index) and all independent variables (gender, treatment received, and psychotherapy) in one equation as a final test of mediation (Table 5, section 6). As noted earlier, mediation is said to occur when the insertion of a mediator variable (positive emotions) significantly accounts for variance in the outcome variable (quality of life) and reduces the predictive effect of the independent variables (gender, etc.) In this analysis, the relationships with quality of life remained significant between both psychotherapy ($p = .003$) and positive emotions ($p < .001$), but those between quality of life and all other variables were rendered non-significant. Importantly, the insertion of positive emotions as a mediating variable reduced the predictive strength of psychotherapy (from partial r^2 in Table 5,

section 1 = .291 to partial r^2 in section 6 = .191) and eliminated treatment received as a significant predictor of quality of life. By examining the change of partial r^2 for psychotherapy from section 1 to section 6 of Table 5, we can see that this predictor originally accounted for 29% of the variance in quality of life and was reduced to 19% of the variance for quality of life when positive emotions were inserted as a mediating variable. In addition, section 6 of Table 5 indicates that positive emotions accounted for 27% of the overall variance on quality of life scores in the final model. As outlined by Sobel (1982), the insertion of positive emotions fully mediated the relationship between treatment received and quality of life (i.e. went from a significant predictor to a non-significant predictor) and partially mediated the relationship between having engaging in psychotherapy and quality of life (i.e. reduced its predictive strength).

Hierarchical regression analyses were conducted to test for significant changes to the model and to control for relapse status. With Total quality of life as the dependent variable, gender, treatment received, and psychotherapy were entered into the equation (step 1) followed by the Positive Emotions Index (step 2) and relapse status (step 3). The results indicated that adding Positive Emotions in step 2 significantly improved the model ($\Delta R^2 = .13$) $\Delta F(4, 43) = 16.11$, $p < .001$. Also, the results indicated that adding relapse status in step 3 significantly improved the overall model ($\Delta R^2 = .03$) $\Delta F(5, 42) = 4.40$, $p = .04$. This confirms that Positive Emotions significantly mediated the relationship between medical/demographic variables and quality of life and that relapse status was a small, yet significant, covariate to quality of life in this population. Finally, it is noteworthy that the partial r^2 's in the initial analysis (Table 5, section 6) were not

substantially different from those reported in the hierarchical analysis (percent variance: psychotherapy = 20%, Positive Emotions = 28%, relapse status = 9%).

Because the first condition of mediation was not met by any predictor variables and benefit finding a formal discussion of a mediator model is not appropriate (Baron & Kenny, 1986). However, the statistics will be provided here in an attempt to further the literature and theory development of this relatively new construct. Not surprisingly, when benefit finding was regressed on the Positive Emotions Index and all predictor variables (gender, treatment received, and psychotherapy), all predictors remained non-significant and positive emotions remained a significant predictor in a positive fashion ($p < .001$; Table 5, section 7). As can be seen by the partial r^2 , positive emotions accounted for 26% of the variance in scores of benefit finding. As will be addressed further in the Discussion section, these results may point toward benefit finding being used as a predictor or mediating variable to quality of life (and other outcome variables) in future research.

Results of the overall Positive Emotions model are presented in Figure 4. As Figure 4 shows, all four conditions for mediator models were met for quality of life, whereas benefit finding did not meet all conditions. Specific in the overall model, participation in psychotherapy remained significantly related to quality of life and was partially mediated by Positive Emotions. Also, the previously significant relationship between number of treatments received for cancer and quality of life was fully mediated (rendered non-significant) by Positive Emotions. In summary, these path analytic results indicate that Positive Emotions have important direct and indirect links with quality of life scores in adolescent cancer survivors.

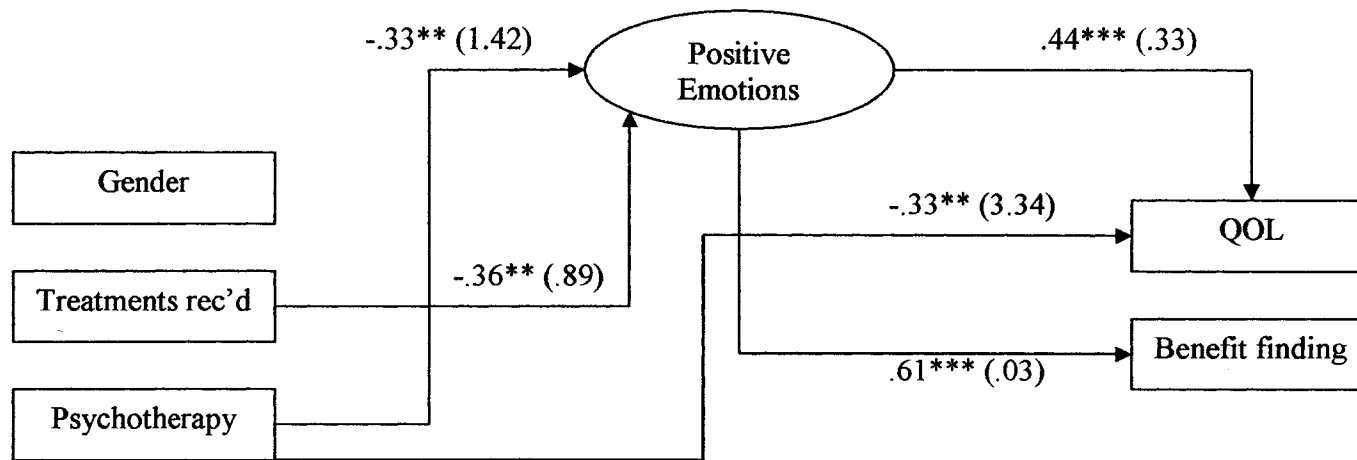


Figure 4. Results of the Path Analyses Delineating Those Paths Found to be Significant in Model 1. All numbers represent standardized beta weights. Numbers in parentheses represent standard errors.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Model #2: Time Perspective

According to the methodology of Baron and Kenny (1986), one's time perspective (Past-Negative and Present-Focused) were hypothesized to function as mediators between the independent variables (gender, treatment received, and participation in psychotherapy) and the dependent variables (quality of life and benefit finding). See Figure 5.

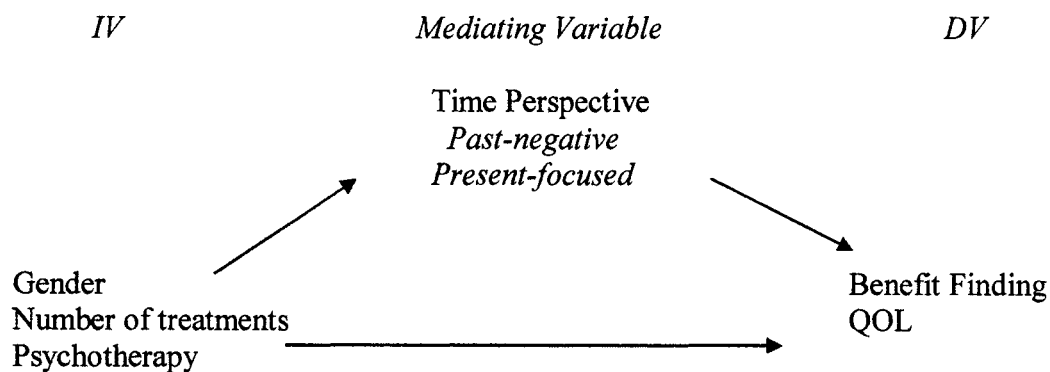


Figure 5. Time Perspective Model.

To test for mediation with multiple regression techniques, the following conditions need to be met for Model 2:

1. Variations in gender, treatment received, and psychotherapy account for significant variations in quality of life and benefit finding.
2. Variations in gender, treatment received, and psychotherapy account for significant variations in time perspective.
3. Variations in time perspective account for significant variations in quality of life and benefit finding.

4. When time perspectives are controlled, the significant relationships among gender, treatment received, and psychotherapy with quality of life and benefit finding are reduced or no longer significant.

Summary of Condition #1:

When quality of life was regressed on each predictor variable alone, the relationships were significant (gender $p = .001$; treatment received $p = .002$; psychotherapy $p < .001$), thus meeting the first criterion for mediation. When quality of life was regressed on gender, treatment received, and psychotherapy in one equation (Table 6, section 1), treatment received and psychotherapy continued to meet the first criterion for mediation ($p = .005$ & $< .001$, respectively) while gender did not ($p = .061$). In summary, the more treatments received for cancer and having been involved in psychotherapy were significantly associated with lower quality of life scores.

When benefit finding was regressed on each predictor variable alone, all relationships were non-significant (gender $p = .732$; treatment received $p = .60$; psychotherapy $p = .966$). As such, the first criterion for mediation with benefit finding was not met. When benefit finding was regressed on gender, treatment received, and psychotherapy in one equation (Table 6, section 2), all three predictors continued to be non-significant. Thus, no predictor variable met the first criterion for mediation with benefit finding.

Summary of Condition #2:

When the Past-Negative Index was regressed on gender, treatment received, and psychotherapy alone, the relationships were non-significant for gender ($p = .094$) and treatment received ($p = .060$), but was significant for psychotherapy ($p = .001$). When the

Table 6

Time Perspective Indices as Mediating Variables Between Gender, Treatment Received, and Psychotherapy and Outcome Variables: Quality of Life and Benefit Finding.

| Dependent Variable | Independent Variable | Partial r^2 | p |
|--------------------|----------------------|---------------|------|
| 1. Quality of Life | Gender | .077 | .061 |
| | Treatment Received | .164 | .005 |
| | Psychotherapy | .291 | .000 |
| 2. Benefit Finding | Gender | .005 | .624 |
| | Treatment Received | .008 | .543 |
| | Psychotherapy | .000 | .951 |
| 3. Past-negative | Gender | .004 | .675 |
| | Treatment Received | .048 | .146 |
| | Psychotherapy | .190 | .002 |
| 4. Present-focused | Gender | .020 | .359 |
| | Treatment Received | .138 | .013 |
| | Psychotherapy | .023 | .325 |
| 5. Quality of Life | Past-negative | .307 | .000 |
| 6. Benefit Finding | Past-negative | .103 | .026 |
| 7. Quality of Life | Present-focused | .023 | .309 |
| 8. Benefit Finding | Present-focused | .053 | .123 |
| 9. Quality of Life | Past-negative | .079 | .071 |
| | Present-focused | .017 | .417 |

| Dependent Variable | Independent Variable | Partial r^2 | p |
|----------------------------|----------------------|---------------|------|
| 9. Quality of Life (cont.) | Gender | .108 | .033 |
| | Treatment Received | .116 | .027 |
| | Psychotherapy | .179 | .005 |
| 10. Benefit Finding | Past-negative | .092 | .051 |
| | Present-focused | .011 | .513 |
| | Gender | .006 | .617 |
| | Treatment Received | .008 | .578 |
| | Psychotherapy | .017 | .406 |

Past-Negative Index was regressed on gender, treatment received, and psychotherapy in one equation (Table 6, section 3), the relationships with gender and treatment received remained non-significant ($p = .675$ & $.146$, respectively), whereas psychotherapy ($p = .002$) remained significant. Thus, the Past-Negative Index met the second criterion for mediation with psychotherapy. In summary, having been involved in psychotherapy was significantly associated with higher scores on a past-negative time perspective.

When the Present-Focused Index was regressed on gender, treatment received, and psychotherapy alone, the relationships were non-significant for gender ($p = .579$) and psychotherapy ($p = .375$), but was significant for treatment received ($p = .029$). When the Present-Focused Index was regressed on gender, treatment received, and psychotherapy in one equation (Table 6, section 4), the relationships with gender and psychotherapy remained non-significant ($p = .359$ & $.325$, respectively), whereas treatment received ($p = .013$) remained significant. Thus, the Present-Focused Index met the second criterion for mediation with treatments received. In summary, the higher number of treatments received for cancer was significantly associated with higher scores on a present-focused time perspective.

Summary of Condition #3:

When quality of life was regressed on the Past-Negative Index, the results indicated that thinking negatively about one's past was significantly associated with quality of life in an inverse fashion ($p < .001$; Table 6, section 5). When benefit finding was regressed on the Past-Negative Index, the results indicated that thinking negatively about one's past was significantly associated with benefit finding in an inverse fashion (p

= .026; Table 6, section 6). Thus, the third criterion for mediation was met by the past-negative index with both quality of life and benefit finding. In summary, higher scores on the Past-Negative Index were significantly associated with lower scores on both quality of life and benefit finding.

When quality of life was regressed on the Present-Focused Index, the results indicated that a strong orientation toward the present moment was not significantly associated with quality of life ($p = .309$; Table 6, section 7). When benefit finding was regressed on the Present-Focused Index, the results indicated that a strong orientation toward the present moment was not significantly associated with benefit finding ($p = .123$; Table 6, section 8). Thus, the third criterion for mediation was not met by the Present-Focused Index with either quality of life or benefit finding. In summary, scores on the Present-Focused Index were not significantly associated with scores on either quality of life or benefit finding.

Summary of Condition #4:

Finally, quality of life was regressed on both mediator variables (Past-Negative and Present-Focused indices) and all independent variables (gender, treatment received, and psychotherapy) in one equation as a final test of mediation (Table 6, section 9). As noted earlier, mediation is said to occur when the insertion of a mediator variable (both time perspective indices) significantly accounts for variance in the outcome variable (i.e. quality of life) and reduces the predictive effect of the independent variables (gender, etc.). In this analysis, the relationships with quality of life remained significant between all predictor variables (Table 6, section 9), but those between quality of life and both time

perspective indices were rendered non-significant. Thus, both time perspective indices did not add predictive ability to quality of life in the model. In fact, inserting both time perspective indices resulted in gender becoming a significant predictor of quality of life (See Table 6, compare sections 1 & 9). As an aside, this finding highlights the statistical anomaly of Type I error, when investigators detect significant results that may not in fact be present, but arise due to having too many variables in a model with a small sample size ($n = 50$; Cohen & Cohen, 1983).

Since gender, treatment received, and psychotherapy did not significantly predict scores on benefit finding, a formal discussion of mediation is not appropriate (Baron & Kenny, 1986). However, the results of when benefit finding was regressed on both mediator variables and all predictor variables are presented in Table 6, Section 10. In this analysis, none of the three predictor variables significantly predicted scores on benefit finding and a past-negative time perspective continued to inversely predict benefit finding ($p = .05$). These results, although not mediational in nature, add to our understanding of this literature, with a past-negative oriented time perspective being viewed as a potential predictor to benefit finding in future research with adolescent cancer survivors.

Results of the overall Time Perspective model are presented in Figure 6. As Figure 6 shows, all four conditions for mediator models were not met for either quality of life or benefit finding. Specific in the overall model, all three medical/demographic variables were significantly related to quality of life, whereas none of these variables were related to benefit finding. Future research with this population should address

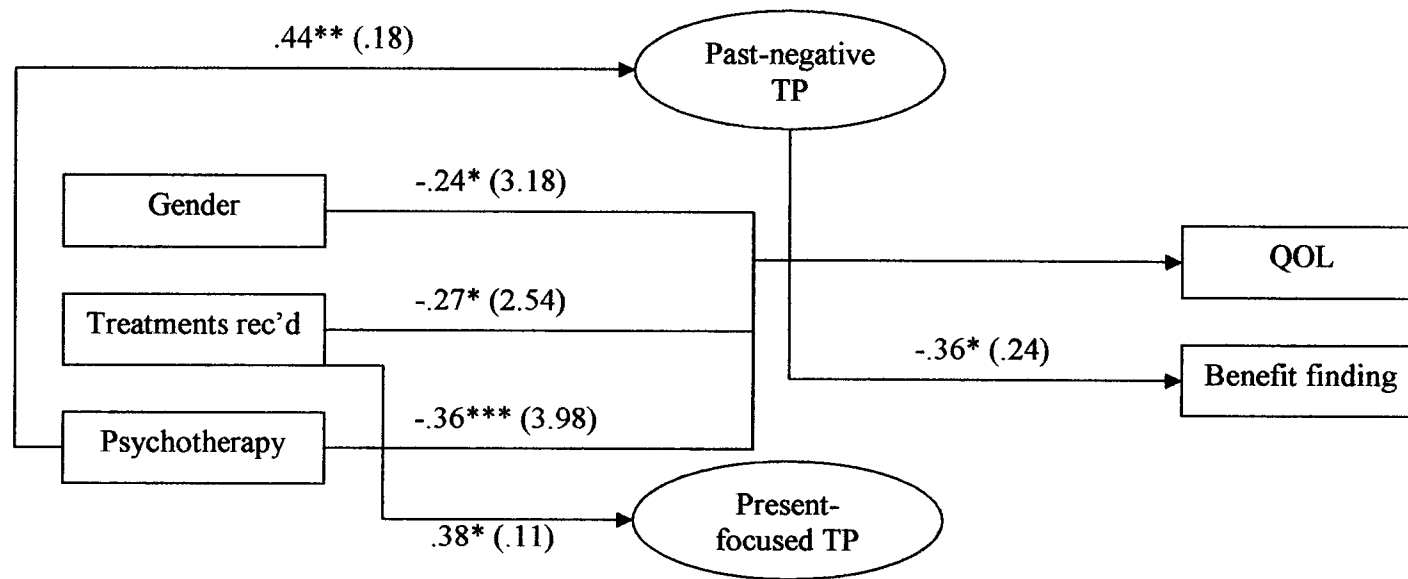


Figure 6. Results of the Path Analyses Delineating Those Paths Found to be Significant in Model 2. All numbers represent standardized beta weights. Numbers in parentheses represent standard errors.

* $p < .05$. ** $p < .01$. *** $p < .001$.

several relationships found in this model, including: prior participation in psychotherapy was significantly associated with higher scores on the Past-Negative time perspective, the number of treatments received for cancer was significantly associated with higher scores on the Present-Focused time perspective, and higher scores on the Past-Negative time perspective scale were significantly associated with lower scores of benefit finding. In summary, both time perspective indices did not provide any direct or indirect links to quality of life or benefit finding in this population.

Discussion

In summary, the Positive Emotions Index fully mediated the relationship between the number of treatments received for cancer and quality of life and partially mediated the relationship between having engaged in psychotherapy and quality of life with adolescent cancer survivors. Importantly, results indicated that patients' with a relapse diagnosis scored significantly different than those with no relapse diagnosis on quality of life. Although positive emotions were significantly associated with scores on benefit finding in a positive direction, benefit finding did not fit two of the four criteria for mediation. Similarly, the Time Perspective model did not meet full criteria for significant mediation with the relationships between predictor variables and outcome variables (quality of life and benefit finding). Regarding time perspective indices, significant associations included: prior participating in psychotherapy was associated with higher scores on a Past-Negative time perspective, the more treatments received for cancer was associated with higher scores on a Present-Focused time perspective, and higher scores on the Past-Negative time perspective was associated with lower scores on benefit finding.

Consistent with our hypotheses, the Positive Emotions Index differed from the outcome variable quality of life and mediated the relationship between the demographic / medical variables of gender, treatment received, and prior participation in psychotherapy. Specifically, positive emotions fully mediated the relationship between treatment received and quality of life and partially mediated the relationship between having engaged in psychotherapy and quality of life. These findings indicate that a patient's level of positive emotions may be a more direct predictor of quality of life than number of

treatments received for cancer and are a significant, partial, predictor of quality of life when compared with participation in psychotherapy.

Inconsistent with our hypotheses, neither time perspective indices significantly differed from quality of life scores with this population. Although higher scores on the Past-Negative time perspective was associated with lower scores of benefit finding, the overall time perspective model did not meet all conditions for successful mediation. Therefore, discussion on time perspective can focus only on significant associations seen within the entire model.

Positive Emotions and Quality of Life

As noted by Shrout and Bolger (2002), mediation models of psychological processes are especially useful for identifying possible points of intervention in applied work. The results of the current study indicate that interventions that focus on the creation and maintenance of positive emotions in adolescent cancer survivors could positively impact their quality of life. Moreover, the notion that one's use of positive emotions can fully mediate their quality of life over and above the amount of treatments received for cancer is ground-breaking. Psycho-oncology research has consistently focused on how to improve patient's quality of life while maintaining effective medical treatments. In essence, the current research suggests that psychological support and interventions that focus on patient's satisfaction with life, subjective happiness, and optimism may improve their quality of life – regardless of the number of treatments received for their cancer. These findings are consistent with previous research that suggests positive emotional experiences provide patients with chronic illnesses effective

psychological resources that may impact their physical health, immune system functioning, motivation to engage in positive health-related behaviors, eliciting social support, and bolster physiological benefits to healing (Salovey, Rothman, Detweiler, & Steward, 2000; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000; Taylor, Lerner, Sherman, Sage, & McDowell, 2003). These results are also in line with assertions that an increased focus on the adaptive function of positive affect and meaning-based coping processes during chronic stress and illness are imperative (Folkman & Moskowitz, 2000).

Therefore, interventions that cultivate positive emotions are especially important to explore with this population. To this end, many practitioners have outlined several theories for understanding happiness and positive emotions in individuals and provided approaches to treating patients with chronic illnesses. This work has begun to diffuse the historical notions that the use of positive emotions, such as happiness, could be a genetic disposition of one's personality (Lykken & Tellegen, 1996). For example, Lykken and Tellegen (1996) stated that "trying to be happier is as futile as trying to be taller" (p. 189). Furthermore, these researchers noted that happiness may be constrained to a genetic set range, with heritability coefficients noted as high as 50% to 80%. However, even if these statements and statistics are accepted, it does not rule out that happiness (and other positive emotions) cannot be raised toward the high point of that range for a specific population via cognitive and behavioral interventions (Lyubomirsky, 2001).

Lyubomirsky (2001) outlined several cognitive and motivational features of happy individuals, including: their appearance to be less sensitive to social comparison, the importance of positive post-decisional rationalization, their tendency to recall past

events as favorable or adaptive, and their ability to not dwell or ruminate on negative events when they occur. Also, Fredrickson (2001) outlined a *broaden and build* theory of expanding one's cognitive, emotional, and behavioral skills to increase the use of positive emotions. This theory has been utilized with a variety of populations, including patients with chronic illnesses. Finally, Folkman and Moskowitz (2000) noted that positive reappraisal, problem-focused coping, and the infusion of ordinary events with positive meaning could be vital skills in the adjustment process of chronic illness patients.

Many effective therapeutic interventions with the general population and chronic illness patients have shown promising results. For example, interventions with the general population have focused on behavior and "flow" in the present moment (Csikszentmihalyi, 1990), mindfulness meditation (Meili & Kabat-Zinn, 2004), and cognitive distraction (Lyubomirsky, 2001). Specifically, recent research has concluded that sustainable gains in well-being are possible over and above the perceived genetic set point noted earlier (Sheldon & Lyubomirsky, 2004). These authors outlined volitional or activity changes that a person might make to achieve sustainable gains in well-being, including: resolving to regularly count his or her blessings, pursue meaningful personal goals, and committing random acts of kindness. In addition, several interventions focusing on positive affect in the present moment have been found in patients surviving cancer, including: cognitive-behavioral approaches (Antoni et al., 2001), a variety of techniques during painful procedures such as imagery, relaxation, modeling, distraction and positive reinforcement, in addition to the appreciation and cultivation of social relationships (Kazak, 2005). A focus on evidenced-based therapeutic interventions with

adolescent cancer survivors is only beginning to show its wealth of future possibilities (Kazak, 2005). Hopefully, the current research will add to the importance of considering positive emotions on therapeutic applications with this population.

This synthesis of quality of life and positive emotions is especially timely since recent research has called on the need to incorporate quality of life measurement into pediatric clinical practice (Varni, Burwinkle, & Lane, 2005). Such an incorporation could facilitate patient-physician communication, improve patient / parent satisfaction, identify hidden morbidities, and assist in clinical decision making by targeting interventions to those most in need. Therefore, the use of quality of life measurements in pediatric clinical settings would improve the medical effectiveness and customer satisfaction aspects of cancer treatment and adjustment (Varni et al., 2005). The current study provides specific guidance to practitioners who wish to maintain or improve patients' quality of life throughout cancer treatment and survivorship.

Another important finding in the current study was that participation in psychotherapy was significantly associated with lower scores on quality of life. This highlights the "middle of the road" stance previously taken by Kazak (1994) which indicated that severe psychopathology is rare in the adolescent cancer population, but mild to moderate adjustment difficulties are seen in a significant percentage of survivors. This notion is further bolstered by our overall results of quality of life being on par with a similar group of healthy adolescents. Clearly, there appears to be a noteworthy gap between those reporting relatively high scores on quality of life and those struggling with their adaptation to cancer survival. As will be addressed later in this section, these results

suggest that future research must continue to explore reasons for such a disparity. Moreover, the present results suggest that the inclusion of measures that assess negative emotions or adjustment processes to survival (i.e. anxious or depressive symptomology) are needed to completely evaluate participants' quality of life. Again, Varni et al.'s (2005) comments toward consistently applying quality of life measures in all phases of treatment for this population could identify and target effective interventions at the moment difficulties become apparent.

Benefit Finding

As noted earlier, neither of the two models proposed involving benefit finding fit all criteria for statistical mediation. Therefore, a formal discussion of statistical mediation with benefit finding is not possible. Specifically, no demographic or medical variables were found to be significantly correlated with benefit finding. This was in line with previous psycho-oncology research (Thornton, 2002), where levels of benefit finding were independent of any demographic or medical variables. As such, it appears that future research with the construct of benefit finding should focus on further theoretical evaluation.

Benefit finding, as a new construct, has been discussed within a variety of theoretical frameworks (Tennen & Affleck, 2002). For example, benefit finding has been construed as a potential coping process, personality characteristic, or an outcome measure that highlights change and growth in an individual. Adding further confusion to this construct to date, benefit finding has been measured in a variety of contexts, including both qualitative and quantitative formats (Antoni et al., 2001; Thornton, 2002). Also,

several researchers have questioned whether the identification of any benefit is important to growth and healing in chronic illness patients or if the amount of benefits are a more salient factor (Sears, Stanton, & Danoff-Burg, 2003; Tennen & Affleck, 2002). Overall, future research will have to consider whether the construct of benefit finding is a predictor of or actual outcome measure of patient quality of life. In addition, specific attention should be placed on how to best measure this ephemeral construct. These theoretical and methodological issues point us toward the findings of the current study.

In the current study, benefit finding was significantly related to both positive emotions and a Past-Negative time perspective. This finding provides new information on the process of benefit finding with adolescent cancer survivors. Also, the results of the current study indicate that benefit finding can be quantitatively measured and moderated by one's affective state and time perspective. This is in accordance with research on adult cancer survivors that found benefit finding is significantly correlated with optimism and hope (Antoni et al., 2001; Sears et al., 2003). However, contrary to prior research with adult cancer survivors, benefit finding was not correlated with level of education (Sears et al., 2003). Clearly, more research is needed with adolescent cancer survivors to better understand the overall process and potential moderators of benefit finding with this population.

Future research with this population should seek to further understand the relationships of positive emotions and a Past-Negative time perspective on benefit finding. The current results indicated that higher scores on the Positive Emotions Index were associated with higher benefit finding scores and higher scores on the Past-Negative

time perspective scale were associated with lower scores on benefit finding. These findings could prove clinically salient with adolescent cancer survivors. The current sample of adolescent cancer survivors averaged seven years between time of diagnosis and participation in the study. As such, they are part of a growing number of survivors facing late-effects to their cancer treatment (Rowland, 2005). Examples of late-effects to treatment include: neuro-cognitive deficits; endocrine, cardiac, and pulmonary function (including reproduction); physical and physiological growth; psychosocial adjustment; health behavior and lifestyle choices; and risk for secondary malignancies. As such, current psycho-oncology research has been charged with finding “meaningful predictive data” that will continue to “develop evidence-based interventions” (Meyer & Fuemmeler, 2005, p. 47). The current study highlights significant relationships between benefit finding and both positive emotions and negative thoughts about the past. As such, future research could determine whether general psychotherapy, which often addresses the cultivation of positive emotions and processing negative events in the past, may be an effective link to increased benefit finding with adolescent cancer survivors.

Time Perspective

Current results indicated significant associations between time perspective indices with quality of life and benefit finding. These included: prior participation in psychotherapy was associated with higher scores on a Past-Negative time perspective; more treatments received for cancer was associated with higher scores on a Present-Focused time perspective; and higher scores on a Past-Negative time perspective was

associated with lower scores on both quality of life and benefit finding. Each of these findings has considerable clinical implications for this population.

First, it may come as no surprise to a psychotherapy clinician that clients with significant distress in their lives often present with many negative thoughts, emotions, and memories about their past. Again, what this finding highlights is the obvious reminder not to focus exclusively on the majority of adolescent cancer survivors who are adjusting well to their chronic illness. Rather, there is a relatively small yet severely troubled sub-group within this population who are in need of consistent quality support and psychotherapy (Kazak, 1994). Further, this finding indicates that if such negative thoughts and emotions can be successfully processed, as is often the case in psychotherapy, many of these survivors may reap the benefits of improved quality of life and benefit finding from their experience. Again, only continued and longitudinal research will determine this.

Second, the more treatments received for cancer resulted in higher scores on the Present-Focused time perspective. As can be seen from the time perspective inventory (ZTPI; Zimbardo & Boyd, 1999), examples of such a time perspective items include: “I do things impulsively,” “Since whatever will be will be, it doesn’t really matter what I do,” and “I take each day as it is rather than try to plan it out.” Again, positively identifying with these and other Present-Focused time perspective items may come as little surprise to a survivor, themselves, or the variety of professionals who work with them on a day-to-day basis. As such, the results give statistical significance to what may be inherently understood by those involved with cancer survivorship. Certainly, it would

be judgmental for professionals working with this population to decide whether such a “live for today” mentality is healthy or not for the survivor. Rather, future research may want to explore the psychological processes involved with the decision-making of the individual to be either wildly hedonistic or energetic vs. hopeless and ruminating.

Third, higher scores on a Past-Negative time perspective were predictive of lower scores on both quality of life and benefit finding. As discussed before, identifying such negative thoughts regarding the past could provide assistance to those most in need. Such assistance could include: individual psychotherapy, group therapy (especially as is often seen with a core group of survivors with shared experiences), support groups and a variety of new and burgeoning evidence-based interventions (i.e., brief and structured cognitive-behavioral groups; Antoni et al., 2001). Although these results and their future implications may appear obvious, there is still a large number of small to medium regional pediatric oncology clinics that have not yet allocated the financial support to include such basic psycho-social services into their clinics. Taken together, these clinics may serve the majority of patients and families in the nation struggling with the medical and psychosocial implications of cancer treatment and survival.

In summary, the results of this study indicate that one’s use of positive emotions is a powerful mediator of quality of life to adolescent cancer survivors. In addition, positive emotions and time perspective were significant related to benefit finding with this population. These findings are promising because the number of adolescent cancer survivors, and their quality of life, has dramatically increased over the past half century. The emerging field of psycho-oncology is currently charged with finding significant

predictors to effective adjustment and evidence-based therapeutic interventions that can continue to assist this growing and capable population. The infusion of positive psychology theory, including the use of positive emotions and time perspective, appears poised to assist the field of psycho-oncology in making future strides toward a greater quality of life for adolescent cancer survivors.

Limitations

One limitation of this study was its cross-sectional design. Future studies, like those attracting external funding and prominence in the psycho-oncology literature, might explore some of these variables in a longitudinal manner to verify temporal relationships. Also, since many of these variables have not been previously applied to adolescent cancer survivors the results of the current study are not generalizable to other populations of similar ages or chronic illnesses. Another potential limitation was the current study's limited sample size ($n = 50$). This is a common methodological issue in the field and is currently being addressed by increased instances of multidisciplinary, multicenter clinical-trial cooperation (Armstrong & Reaman, 2005). Also, this cooperative trend will improve the methodology utilized and statistical procedures available to the researcher via structural equation modeling techniques that can consider larger models and cleaner mediational approaches (Patenaude & Kupst, 2005). For example, larger sample sizes and longitudinal studies will be more effective in analyzing patients in the "middle of the road" – the small yet significant sub-group of adolescent cancer survivors that are not adjusting well to their disease (Kazak, 1994; Kazak, 2005). As such, future research will be able to address these methodological and statistical issues while also extending its

knowledge of the role that positive emotions and time perspective have on the adjustment process of adolescent cancer survivors.

Additional Future Research Considerations

The results of the current study indicate several areas for future research. First, the present study exhibited several strengths as outlined in previous psycho-oncology research (Kazak, 1994). These strengths included: focusing on a specific population (i.e. adolescents, aged 10 – 21 years at diagnosis) and the use of statistically strong, developmentally appropriate, and disease-specific measure when possible (i.e. quality of life). In addition to the strengths and limitations noted above, future research should focus on moving beyond self-report measures, using longer-term follow ups, extending studies to a more diverse sample, and using longitudinal designs (Helgeson, 2005). Also, current results indicated that patients' diagnosed with a relapse scored significantly different than those with no relapse diagnosis; thus emphasizing the need to consider this sub-group of survivors separately in future research. Synthesizing this and other research available to date will ensure future research that is comprehensive in scope and specific in theory development and outlining effective interventions with adolescent cancer survivors.

Conclusion

This study utilized a within-group approach to evaluate how levels of time perspective and positive emotions mediate the quality of life (QOL) and benefit finding of adolescent cancer survivors. A mediation research model was especially appropriate for this area of study and population since it provided useful information for theory

development and identifying possible points of intervention in applied work (Shrout & Bolger, 2002). Study results, therefore, have provided important information about the psychosocial factors that are present when cancer survivors adapt both positively and poorly. To this end, study results can be utilized for future research and intervention techniques that incorporate both a preventive and strengths-based approach to the critically under-served population of adolescent cancer survivors.

Testing the importance of time perspective and positive emotions in the adaptation process of adolescent cancer survivors will inform health psychologists who are part of a comprehensive treatment team in the hospital setting. Knowledge of survivors' quality of life and ability to find benefit in their experience 2 – 10 years post-diagnosis will directly inform the psychosocial treatment of this population from initial diagnosis and across the life-span. Finally, this research highlights the interconnectedness between the medical treatment and psychosocial processes that confronts the critically important population of adolescent cancer survivors.

References

- Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformation. *Journal of Abnormal Psychology, 87*, 49-74.
- Agrawal, A., & Anubhuti, P. (1998). Coping with chronic illness: Role of psychosocial factors. *Psychological Studies, 43*, 58-64.
- Affleck, G., & Tennen, H. (1996). Construing benefits from adversity: Adaptational significance and dispositional underpinnings. *Journal of Personality, 64*, 899-922.
- Affleck, G., Tennen, H., Croog, S., & Levine, S. (1987). Causal attribution, perceived benefits, and morbidity following a heart attack: An eight-year study. *Journal of Consulting and Clinical Psychology, 55*, 29-35.
- Affleck, G., Tennen, H., & Rowe, J. (1991). *Infants in crises: How parents cope with newborn intensive care and its aftermath*. New York: Springer-Verlag.
- American Cancer Society (2004). *Cancer facts and figures: 2004*. Atlanta: Author.
- Anderson, B. L. (1992). Psychological interventions for cancer patients to enhance the quality of life. *Journal of Consulting and Clinical Psychology, 60*, 552-568.
- Anderson, B. O. (2002). What outcomes matter to patients: A surgeon's perspective. *Medical Care, 40*, III-28 – III-30.
- Antoni, M., H., Lehman, J., M., Kilbourn, K., M., Boyers, A., E., Culver, J., L., Alferi, S., M., Yount, S., E., McGregor, B., A., Arean, P., L., Harris, S., D., Price, A., A., & Carver, C., S. (2001). Cognitive-behavioral stress management intervention decreases the prevalence of depression and enhances benefit finding among women under treatment for early-stage breast cancer. *Health Psychology, 20*, 20-32.
- Armstrong, D. F., & Reaman, G. H. (2005). Psychological research in childhood cancer: The Children's Oncology Group perspective. *Journal of Pediatric Psychology, 30*, 89-97.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Baron, R. M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

- Bessel, A. G. (2001). Children surviving cancer: Psychosocial adjustment, quality of life, and school experiences. *Exceptional Children, 67*, 345-359.
- Bitsko, M. J. (1997). Three moderating factors in the retirement transition process of collegiate student-athletes: Social support, coping skills, and athletic identity. Unpublished master's thesis, Springfield, MA.
- Blazer, D., Kessler, R., McGonagle, K., Swartz, M. S. (1994). The prevalence and distribution of major depression in a national community sample: The National Comorbidity Survey. *American Journal of Psychiatry, 151*, 979-986.
- Bower, J. E., Kemeny, M. E., Taylor, S. E., & Fahey, J. L. (1998). Cognitive processing, discovery of meaning, CD4 decline, and AIDS-related mortality among bereaved HIV-seropositive men. *Journal of Consulting and Clinical Psychology, 66*, 979-986.
- Boyers, A. E., Carver, C. S., & Antoni, M. F. (2000). Correlates of benefit finding and growth experiences among women treated for early stage breast cancer. Manuscript in preparation.
- Brewer, B. W. (1993). Self-identity and specific vulnerability to depressed mood. *Journal of Personality, 61*, 343-364.
- Brown, S. D., Brady, T., Lent, R. W., Wolfert, J., & Hall, S. (1987). Perceived social support among college students: Three studies of the psychometric characteristics and counseling uses of the social support inventory. *Journal of Counseling Psychology, 34*, 337-354.
- Buchanan, G. M., & Seligman, M. E. P. (1995). *Explanatory Style*. Hillsdale, NJ: Lawrence Erlbaum.
- Carlson, L. E., Speca, M., Patel, K. D., & Goodey, E. (2003). Mindfulness-based stress reduction in relation to quality of life, mood, symptoms of stress, and immune parameters in breast and prostate cancer outpatients. *Psychosomatic Medicine, 65*, 571-581.
- Carver, C. S., Pozo, C., Harris, S. D., Noriega, V., Scheier, M. F., Robison, D. S., Ketcham, A. S., Moffat, F. L., & Clark, K. C. (1993). How coping mediates the effect of optimism on distress: A study of women with early stage breast cancer. *Journal of Personality and Social Psychology, 65*, 375-390.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56*, 267-283.
- Cella, D. F. (1992). Quality of life: The concept. *Journal of Palliative Care, 8*, 8-13.

- Cohen, J. & Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (2nd ed.). New Jersey: Lawrence Erlbaum Associates, Inc.
- Colarosso, C. A. (1988). The development of time sense in adolescence. *Psychoanalytic Study of the Child*, 43, 179-197.
- Covas, V. L. (2000). Temporal perspective, pupose in life, and optimism as factors of resiliency in at-risk male adolescents (Doctoral dissertation, Adler School of Professional Psychology, 2000). Dissertation Abstracts International, 60, 11-B.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper & Row.
- Davis, C. G., Nolen-Hoeksema, S., & Larson, J. (1998). Making sense of loss and benefiting from the experience: Two construals of meaning. *Journal of Personality and Social Psychology*, 75, 561-574.
- Diener, E., Emmons, R. A., Larsen, R. H., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Diener, E., Sandvik, E., & Pavat, W. (1991). Happiness is the frequency, not the intensity, of positive versus negative affect. In F. Strack (Ed.), *Subjective well-being: An interdisciplinary perspective* (pp. 119-139). Oxford: Pergamon.
- Diener, E., Suh, E. M., Lucas, R. E., Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125, 276-302.
- Eisner, C., Hill, J. J., & Vance, Y. H. (2000). Examining the psychological consequences of surviving childhood cancer: Systematic review as a research method in pediatric psychology. *Journal of Pediatric Psychology*, 25, 449-460.
- Elkin, D., Phipps, S., Mulhern, R., Fairclough, D. (1997). Psychological functioning of adolescent and young adult survivors of pediatric malignancy. *Medical Pediatric Oncology*, 29, 582-588.
- Epel, E. S., McEwen, B. S., & Ickovics, J. R. (1998). Embodying psychological thriving: Physical thriving in response to stress. *Journal of Social Issues*, 54, 301-322.
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York: Norton.
- Ferrell, B. R., Hassey, D. K. (1997). Quality of life among long-term cancer survivors. *Oncology*, 11, 565-571.
- Fiske, S. T., & Taylor, S. E. (1991). *Social Cognition* (2nd ed.). New York: McGraw-Hill.

- Folkman, S. (1997). Positive psychological states and coping with severe stress. *Social Science Medicine*, 45, 1207-1221.
- Folkman, S. & Moskowitz, J. T. (2000). Positive psychology from a coping perspective. *Psychological Inquiry*, 14, 121-125.
- Frankl, V. E. (1963). *Man's search for meaning*. New York: Pocket.
- Fredrickson, B. L. (2000). Cultivating positive emotions to optimize health and well-being. *Prevention and Treatment*, 3. Available on the World Wide Web: <http://journals.apa.org/prevention>.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden and build theory of positive emotions. *American Psychologist*, 56, 218-226.
- Fredrickson, B. L. (2002). Positive emotions. In C. R. Synder & S. J. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 120-134). London; Oxford University Press.
- Fritz, G. K., Williams, J. R. (1988). Issues of adolescent development for survivors of childhood cancer. *Journal of the American Academy of Childhood and Adolescent Psychiatry*, 27, 712-715.
- Graves, K. D. (2003). Social cognitive theory and cancer patients' quality of life: A meta-analysis of psychosocial intervention components. *Health Psychology*, 22, 210-219.
- Greendorfer, S. L., & Blinde, E. M. (1985). "Retirement" from intercollegiate sport: Theoretical and empirical considerations. *Sociology of Sport Journal*, 2, 101-110.
- Heidegger, M. (1927). *Being and Time*. Halle, Germany: Niemeyer.
- Helgeson, V. S. (2005). Recent advances in psychosocial oncology. *Journal of Consulting and Clinical Psychology*, 73, 268-271.
- Holman, E. A., & Silver, R. C. (1998). Getting "stuck" in the past: Temporal orientation and coping with trauma. *Journal of Personality and Social Psychology*, 74, 1146-1163.
- Hudson, M. M., et al. (2003). Health status of adult long-term survivors of childhood cancer: A report from the Childhood Cancer Survivor Study. *Journal of the American Medical Association*, 290, 1583-1592.

- Husserl, E. (1964). *Phenomenology of internal time consciousness* (J. Churchill, Trans.). Bloomington: Indiana University Press.
- James, W. (1890). *The Principles of Psychology*. (Vol. 1). New York, NY: Dover
- Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. New York: Free Press.
- Katz, R. C., Flasher, L., Cacciapaglia, H., & Nelson, S. (2001). The psychosocial impact of cancer and lupus: A cross validation study that extends the generality of “benefit finding” in patients with chronic disease. *Journal of Behavioral Medicine*, 24, 561-571.
- Kazak, A. E. (2005). Evidence-based interventions for survivors of childhood cancer and their families. *Journal of Pediatric Psychology*, 30, 29-39.
- Kazak, A. E. (1994). Implications of survival: pediatric oncology patients and their families. In *Pediatric Psychooncology, Psychological Perspectives on Children with Cancer*, Bearison, D.J., Mulhern, R. K., eds., New York Oxford University Press, 171-192.
- Kazak, A. E., Barakat, L. P., Meeske, K., Christakis, D., Meadows, A. T., Casey, R., Penati, B., & Stuber, M. L. (1997). Post traumatic stress, family functioning, and social support in survivors of childhood leukemia and their mothers and fathers. *Journal of Consulting and Clinical Psychology*, 65, 120-129.
- Kazak, A. E., & Meadow, A. (1989). Families of young adolescents who have survived cancer: Socio-emotional adjustment, adaptability, and social support. *Journal of Pediatric Psychology*, 14, 175-191.
- Keough, K. A., Zimbardo, P. G., & Boyd, J. N. (1999). Who’s smoking, drinking, and using drugs? Time perspective as a predictor of substance abuse. *Journal of Basic and Applied Social Psychology*, 21, 149-164.
- Koocher, G., & O’Malley, J. (1981). *The Damocles Syndrome*. New York: McGraw Hill.
- Lang, F. R., Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging*, 17, 125-139.
- Lepore, S. J., Helgeson, V. S., Eton, D. T., & Schulz, R. (2003). Improving quality of life in men with prostate cancer: A randomized controlled trial of group education interventions. *Health Psychology*, 22, 443-452.

- Lewin, K. (1951). *Field Theory in the Social Sciences: Selected Theoretical Papers*. New York, NY: Harper.
- Lykken, D., & Tellegan, A. (1996). Happiness is a stochastic phenomenon. *Psychological Science*, 7, 186-189.
- Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46, 137-155.
- Lyubomirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem-solving. *Journal of Personality and Social Psychology*, 69, 176-190.
- Mahon, N. E., & Yarcheski, T. J. (1994). Future time perspective and positive health practices in adolescents. *Perceptual and Motor Skills*, 79, 395-398.
- Mahon, N. E., Yarcheski, T. J., & Yarcheski, A. (1997). Future time perspective and positive health practices in young adults: An extension. *Perceptual and Motor Skills*, 84, 1299-1304.
- Mann, T. (2001). Effects of future writing and optimism on health behaviors in HIV-infected women. *Annals of Behavioral Medicine*, 23, 26-33.
- Mann, T., Kato, P. M., Figdor, E. J., & Zimbardo, P. G. (1999). How to make a pessimist behave like an optimist: Future writing, optimism, and health behaviors in cancer survivors and HIV patients. Unpublished manuscript, Stanford University, Palo Alto, CA.
- Maruta, T., Colligan, R.C., Malinchoc, M. S., & Offord, K. P. (2000). Optimists vs. pessimists: Survival rate among medical patients over a 30-year period. *Mayo Clinic Proceedings*, 75, 140-143.
- McMillan, J. C., Fisher, R. H., & Smith, E. M. (1997). Perceived benefit and mental health after three types of disaster. *Journal of Consulting and Clinical Psychology*, 65, 733-739.
- Meili, T. & Kabat-Zinn, J. (2004). The power of the human heart: A story of trauma and recovery and its implications for rehabilitation and healing. *Advances in Mind-Body Medicine*, 20, 6-16.
- Meyer, E. A., & Fuemmeler, B. F. (2005). Commentary: Psychosocial functioning of children and adolescents surviving cancer: The junior investigators' perspective. *Journal of Pediatric Psychology*, 30, 47-49.

- Miller, R. W., Young, J. L., & Nivakovic, B. (1995). Childhood cancer. *Cancer*, 75, 395-405.
- Mohr, D. C., Dick, L. P., Russo, D., Pinn, J., Boudewyn, A. C., Likosky, W., & Goodkin, D. E. (1999). The psychosocial impact of multiple sclerosis: Exploring the patient's perspective. *Health Psychology*, 18, 376-382.
- Mulhern, R., Wasserman, A., Friedman, A., Fairclough, D. (1989). Social competence and behavioral adjustment of children who are long-term survivors of cancer. *Pediatrics*, 83, 18-25.
- Myers, D. G. (1993). *The Pursuit of Happiness: Discovering the Pathway to Fulfillment, Well-Being, and Enduring Personal Joy*. New York: Avon.
- Noll, R., Bukowski, W., Davies, W., Koontz, K., Kulkarni, R. (1993). Adjustment in the peer system of adolescents with cancer. *Journal of Pediatric Psychology*, 18, 351-364.
- Nurmi, J. E. (1991). How do adolescents see their future? A review of the development of future orientation and planning. *Developmental Review*, 11, 1-59.
- Owen, J. E., Klapow, J. C., Hicken, B., & Tucker, D. C. (2001). Psycho-social interventions for cancer: Review and analysis using a three-tiered outcomes model. *Psycho-Oncology*, 10, 218-230.
- Patenaude, A. F., & Kupst, M. J. (2005). Psychosocial functioning in pediatric cancer. *Journal of Pediatric Psychology*, 30, 9-27.
- Piaget, J. (1969). *The Mechanisms of Perception* (Trans. Seagram, G. N.). London: Routledge and Keegan Paul.
- Pendley, J. S., Dahlquist, L. M., & Dreyer, Z. A. (1997). Body image and psychosocial adjustment in adolescent cancer survivors. *Journal of Pediatric Psychology*, 22, 29-43.
- Peterson, C. (2000). The future of optimism. *American Psychologist*, 55, 44-55.
- Peterson, C. (1988). Explanatory style as a risk factor for illness. *Cognitive Therapy and Research*, 12, 119-132.
- Peterson, C. (1991). Meaning and measurement of explanatory style. *Psychological Inquiry*, 2, 1-10.

- Peterson, C., Moon, C., Michaels, C. E., Bishop, M. P., Smith, J. S., & Michaels, A. A. (1998). Explanatory style as a risk factor for traumatic mishaps. Unpublished manuscript, University of Michigan, Ann Arbor.
- Peterson, C., Seligman, M. E. P., & Vaillant, G. E. (1988). Pessimistic explanatory style is a risk factor for physical illness: A thirty-five year longitudinal study. *Journal of Personality and Social Psychology*, 55, 23-27.
- Peterson, C., Semmel, A., von Baeyer, C., Abramson, L. Y., Metalsky, G. I., & Seligman, M. E. P. (1982). The Attributional Style Questionnaire. *Cognitive Therapy and Research*, 6, 287-299.
- Power, M., Bullinger, M., Harper, A., and the World Health Organization Quality of Life Group (1999). The World Health Organization WHO-QOL-100: Tests of the universality of quality of life in 15 different cultural groups worldwide. *Health Psychology*, 18, 495-505.
- Robison et al. (2002). Study design and cohort characteristics of the childhood cancer survivor study: A multi-institutional collaborative project. *Medical Pediatric Oncology*, 38, 229-239.
- Rosenbaum, E. H., Spiegel, D., Fobair, P., Hawn, M., Festa, B., Nouriani, B., Gautier, H., & Silverberg, M. (n.d.). The role of cancer supportive care in enhancing quality of life: A comprehensive program for cancer patients and their families. *Cancer Supportive Care: The Fifth Dimension*. Retrieved October 10, 2002, from <http://www.cancersupportivecare.com/Program/enhancement.html>
- Rowe, I., & Marcia, J. E. (1980). Ego identity status, formal operations, and moral development. *Journal of Youth & Adolescence*, 9, 87-99.
- Rowland, J. H. (2005). Forward: Looking beyond cure: Pediatric cancer as a model. *Journal of Pediatric Psychology*, 30, 1-3.
- Salovey, P., Rothman, A. J., Detweiler, J. B., & Steward W. T. (2000). Emotional states and physical health. *American Psychologist*, 55, 110-121.
- Sama, L., Padilla, G., Holmes, C., Tashkin, D., Brecht, M. L., & Evangelista, L. (2002). Quality of life of long-term survivors of non-small-cell lung cancer. *Journal of Clinical Oncology*, 20, 2920-2929.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4, 219-247.

- Scheier, M. F., & Carver, C. S. (1987). Dispositional optimism and physical well-being: The influence of generalized outcome expectancies on health. *Journal of Personality*, 55, 169-210.
- Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research*, 16, 201-228.
- Scheier, M. F., Matthews, K. A., Owens, J. F., Schulz, R., Bridges, M. W., Magovern, G. J., Sr., & Carver, C. S. (1999). Optimism and rehospitalization following coronary artery bypass graft surgery. *Archives of Internal Medicine*, 159, 829-835.
- Sears, S. R., Stanton, A. L., & Danoff-Burg, S. (2003). The Yellow Brick Road and the Emerald City: Benefit finding, positive reappraisal coping, and posttraumatic growth in women with early-stage breast cancer. *Health Psychology*, 22, 487-497.
- Segerstrom, S. C., Taylor, S. E., Kemeny, M. E., Fahey, J. L. (1998). Optimism is associated with mood, coping, and immune change in response to stress. *Journal of Personality and Social Psychology*, 74, 1646-1655.
- Seligman, M. E. P. (1998). *Learned Optimism*. New York: Knopf.
- Seligman, M. E. P. (2002). *Authentic Happiness*. New York: Free Press.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55, 5-14.
- Seligman, M. E. P., Reivich, K., Jaycox, L., & Gillham, J. (1995). *The Optimistic Child*. New York: Harper Perennial.
- Sheldon, K. M., & Lyubomirsky, S. (2004). Achieving sustainable new happiness: Prospects, practices, and prescriptions. In Linley, P. A., & Stephen, J. (Eds.). *Positive Psychology in Practice* (pp. 127-145). New York: Wiley & Sons.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and non-experimental studies: New procedures and recommendations. *Psychological Methods*, 7, 422-445.
- Shulz, R., Bookwala, J., Knapp, J. E., Scheier, M., Williamson, G. M. (1996). Pessimism, age, and cancer mortality. *Psychology and Aging*, 11, 304-309.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology 1982* (pp. 290-312). San Francisco: Jossey-Bass.

- Spirito, A., Stark, L., Cobiella, C., Drigan, R., Androkites, A. Hewett, K. (1990). Social adjustment of children successfully treated for cancer. *Journal of Pediatric Psychology*, 15, 359-371.
- Stern M., Norman, S. L., Zevon, M. A. (1993). Adolescents with cancer: Self-image and social support as indices of adaptation. *Journal of Adolescent Research*, 8, 124-142.
- Stern, M., Norman, S. L., Zevon, M. A. (1991). Career development of adolescent cancer patients: a comparative analysis. *Journal of Counseling Psychology*, 38, 431-439.
- Stern, M. & Bitsko, M. (2003). Pregnancy, childbirth, and postpartum outcomes: Selected issues and implications for counseling intervention. In M. Kopola & M. Keital (Eds.), *Handbook of Counseling Women*. Sage Publishing.
- Strack, S., Carver, C. S., & Blaney, P. H. (1987). Predicting successful completion of an aftercare program following treatment for alcoholism: The role of dispositional optimism. *Journal of Personality and Social Psychology*, 53, 579-584.
- Szabo, S. (1996). The World Health Organization quality of life assessment instrument. In B. Spilker (Ed.), *Quality of life and pharmacoeconomics in clinical trials* (2nd ed., pp. 355-362). Philadelphia: Lipincott-Raven.
- Taylor, S. E. (1989). *Positive Illusions: Creative self-deception and the health mind*. New York: Basic Books.
- Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38, 1161-1173.
- Taylor, S. E., & Brown J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 110, 193-210.
- Taylor, S. E., & Brown J. D. (1994). Positive illusions and well-being revisited: Separating fact from fiction. *Psychological Bulletin*, 116, 21-27.
- Taylor, S. E., Kemeny, M. E., Aspinwall, L. G., Schneider, S. G., Rodriguez, R., & Herbert, M. (1992). Optimism, coping, psychological distress, and high-risk sexual behavior among men at risk for acquired immunodeficiency syndrome (AIDS). *Journal of Personality and Social Psychology*, 63, 460-473.
- Taylor, S., E., Lichtman, R., R., & Wood, J., V. (1984). Attributions, beliefs about control, and adjustment to breast cancer. *Journal of Personality and Social Psychology*, 46, 489-502.

- Taylor, S. E., Kemeny, M. E., Reed, G. M., Bower, J. E., Gruenewald, T. L. (2000). Psychological resources, positive illusions, and health. *American Psychologist*, 55, 99-109.
- Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma and transformation: Growing in the aftermath of suffering*. Thousand Oaks, CA: Sage.
- Tennen, H., & Affleck, G. (1999). Finding benefits in adversity. In C. R. Snyder (Ed.), *Coping: The psychology of what works* (pp. 279-304). New York: Oxford University Press.
- Tennen & Affleck (2002). Benefit-finding and benefit reminding. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of Positive Psychology* (pp. 584-597). London; Oxford University Press.
- Tennen, H., Affleck, G., Urrows, S., Higgins, P., & Mendola, R. (1992). Perceiving control, construing benefits, and daily processes of rheumatoid arthritis. *Canadian Journal of Behavioral Science*, 24, 186-203.
- Thompson, S. C. (1985). Finding positive meaning in a stressful event and coping. *Basic and Applied Social Psychology*, 6, 279-295.
- Thorton, A. A. (2002). Perceiving Benefits in the cancer experience. *Journal of Clinical Psychology in Medical Settings*, 9, 153-165.
- Tierney, W. M., & McKinley, E. D. (2002). When the physician-researcher gets cancer: Understanding cancer, its treatment, and quality of life from the patients' perspective. *Medical Care*, 40, III-20 – III-27.
- Tiger, L. (1979). *Optimism: The biology of hope*. New York: Simon & Schuster.
- Trunzo, J. J., & Pinto, B. M. (2003). Social support as a mediator of optimism and distress in breast cancer survivors. *Journal of Consulting & Clinical Psychology*, 71, 805-811.
- Varni, J. W., Burwinkle, T. M., & Lane, M. M. (2005). Health-related quality of life measurement in pediatric clinical practice: An appraisal and precept for future research and application. *Health and Quality of Life Outcomes*, 3, 34-47.
- Varni, J. W., Katz, E. R., Colegrove, R., & Dolgin, M. (1994). Perceived stress and adjustment of long-term survivors of childhood cancer. *Journal of Psychosocial Oncology*, 12, 1-16.

- Varni, J. W., Seid, M., & Rode, C. A. (1999). The PedsQL: Measurement model for the Pediatric Quality of Life Inventory. *Medical Care*, 37, 126-139.
- Varni, J. W., Seid, M., & Kurtin, P. S. (2001). PedsQL 4.0: Reliability and Validity of the Pediatric Quality of Life Inventory Version 4.0 Generic Core Scales in healthy and patient populations. *Medical Care*, 39, 800-812.
- Wills, T. A., Sandy, J. M., Yaeger, A. M. (2001). Time perspective and early-onset substance use: A model based on stress-coping theory. *Psychology of Addictive Behaviors*, 15, 118-125.
- Zebrack, B.J., & Chesler, M.A. (2002). Quality of life in childhood cancer survivors. *Psycho-Oncology*, 11, 132-141.
- Zebrack, B. J., Zeltzer, L. K. (2002). Quality of life issues and cancer survivorship. Report prepared for the Institute of Medicine. Retrieved May 1, 2005, from <http://www.iom.edu/file.asp?id=15236>
- Zebrack, B. J., Zeltzer, L. K., Whitton, J., Mertons, A. C., Odom, L., Berkow, R., & Robison, L. L. (2002). Psychological outcomes in long-term survivors of childhood leukemia, Hodgkin's disease, and non-Hodgkin's lymphoma: A report from the Childhood Cancer Survivor Study. *Pediatrics*, 110, 42-52.
- Zimbardo, P. G. (2002). Time to take our time. *Psychology Today*, March, 62.
- Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology*, 77, 1271-1288.
- Zimbardo, P. G., Keough, K. A., & Boyd, J. N. (1997). Present time perspective as a predictor of risky driving. *Personality and Individual Differences*, 23, 1007-1023.

Appendix

Demographic Information

Today's date: _____

Your current age: _____

1. Gender (please circle one): Male Female

2. Your ethnic background (please check all that apply):

- ☐ White, not of Hispanic background
- ☐ Hispanic-American
- ☐ African-American
- ☐ Asian-American
- ☐ Native American
- ☐ Other, please specify: _____

3. Are you currently in school? YES NO

If yes, what school and grade? _____

If no, what are you doing now (i.e., if working, please describe)? _____

4. Marital status: Single Married Divorced Separated Other: _____

5. With whom do you currently live? (please check one)

- ☐ With both parents
- ☐ With father only
- ☐ With mother only
- ☐ Alone
- ☐ With a roommate
- ☐ With another relative
- ☐ Other, please specify: _____

6. Education completed: (please circle one)

Some high school high school graduate/equivalent some college college graduate post-graduate

7. Estimated Income:

A. Over the last year, what is the total income of the household you live in?

- ☐ Less than \$ 9,999
- ☐ \$10,000 - \$19,999
- ☐ \$20,000 - \$39,999
- ☐ \$40,000 - \$59,999
- ☐ Over \$60,000

Demographic Information, continued

B. Over the last year, what is your personal income?

- ☐ Less than \$ 9,999
- ☐ \$10,000 - \$19,999
- ☐ \$20,000 - \$39,999
- ☐ \$40,000 - \$59,999
- ☐ Over \$60,000

We would like to get some information about your diagnosis of cancer:

1. What type of cancer were you diagnosed with?: _____

2. When were you diagnosed? (month & year): _____

3. How old were you: _____

4. When was your last treatment received for the cancer? (month & year): _____

5. What type of treatment did you receive? (please check all that apply):

- ☐ Surgery
- ☐ Chemotherapy
- ☐ Radiation
- ☐ Other, please specify: _____

6. Since your initial diagnosis, have you experienced a relapse? YES NO

If yes, what was your relapse diagnosis?: _____

7. Have you received any psychological or counseling services since your date of diagnosis?
(please check all that apply):

- ☐ No
- ☐ Yes, individual counseling
- ☐ Yes, group counseling
- ☐ Yes, support group
- ☐ Other, please specify: _____

8. For our future planning, what type of information or help do you think should be available to adolescent cancer survivors?

PedsQLTM
Pediatric Quality of Life
Inventory

Version 4.0

DIRECTIONS

On the following page is a list of things that might be a problem for you. Please tell us **how much of a problem** each one has been for you during the **past ONE month** by circling:

- 0** if it is **never** a problem
- 1** if it is **almost never** a problem
- 2** if it is **sometimes** a problem
- 3** if it is **often** a problem
- 4** if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

*In the past **ONE month**, how much of a **problem** has this been for you ...*

| ABOUT MY HEALTH AND ACTIVITIES (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|--|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. It is hard for me to walk more than one block | 0 | 1 | 2 | 3 | 4 |
| 2. It is hard for me to run | 0 | 1 | 2 | 3 | 4 |
| 3. It is hard for me to do sports activity or exercise | 0 | 1 | 2 | 3 | 4 |
| 4. It is hard for me to lift something heavy | 0 | 1 | 2 | 3 | 4 |
| 5. It is hard for me to take a bath or shower by myself | 0 | 1 | 2 | 3 | 4 |
| 6. It is hard for me to do chores around the house | 0 | 1 | 2 | 3 | 4 |
| 7. I hurt or ache | 0 | 1 | 2 | 3 | 4 |
| 8. I have low energy | 0 | 1 | 2 | 3 | 4 |

| ABOUT MY FEELINGS (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|---|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. I feel afraid or scared | 0 | 1 | 2 | 3 | 4 |
| 2. I feel sad or blue | 0 | 1 | 2 | 3 | 4 |
| 3. I feel angry | 0 | 1 | 2 | 3 | 4 |
| 4. I have trouble sleeping | 0 | 1 | 2 | 3 | 4 |
| 5. I worry about what will happen to me | 0 | 1 | 2 | 3 | 4 |

| HOW I GET ALONG WITH OTHERS (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|---|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. I have trouble getting along with other teens | 0 | 1 | 2 | 3 | 4 |
| 2. Other teens do not want to be my friend | 0 | 1 | 2 | 3 | 4 |
| 3. Other teens tease me | 0 | 1 | 2 | 3 | 4 |
| 4. I cannot do things that other teens my age can do | 0 | 1 | 2 | 3 | 4 |
| 5. It is hard to keep up with my peers | 0 | 1 | 2 | 3 | 4 |

| ABOUT SCHOOL (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|--|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. It is hard to pay attention in class | 0 | 1 | 2 | 3 | 4 |
| 2. I forget things | 0 | 1 | 2 | 3 | 4 |
| 3. I have trouble keeping up with my schoolwork | 0 | 1 | 2 | 3 | 4 |
| 4. I miss school because of not feeling well | 0 | 1 | 2 | 3 | 4 |
| 5. I miss school to go to the doctor or hospital | 0 | 1 | 2 | 3 | 4 |

*In the past **one month**, how much of a **problem** has this been for you ...*

| PAIN AND HURT (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|---|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. I ache or hurt in my joints and/or muscles | 0 | 1 | 2 | 3 | 4 |
| 2. I hurt a lot | 0 | 1 | 2 | 3 | 4 |

| NAUSEA (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|--|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. I become sick to my stomach when I have medical treatments | 0 | 1 | 2 | 3 | 4 |
| 2. Food does not taste very good to me | 0 | 1 | 2 | 3 | 4 |
| 3. I become sick to my stomach when I think about medical treatments | 0 | 1 | 2 | 3 | 4 |
| 4. I feel too sick to my stomach to eat | 0 | 1 | 2 | 3 | 4 |
| 5. Some foods and smells make me sick to my stomach | 0 | 1 | 2 | 3 | 4 |

| PROCEDURAL ANXIETY (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|---|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. Needle sticks (i.e. injections, blood tests, IV's) hurt | 0 | 1 | 2 | 3 | 4 |
| 2. I get scared when I have to have blood tests | 0 | 1 | 2 | 3 | 4 |
| 3. I get scared about having needle sticks (i.e. injections, blood tests, IV's) | 0 | 1 | 2 | 3 | 4 |

| TREATMENT ANXIETY (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|---|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. I get scared when I am waiting to see the doctor | 0 | 1 | 2 | 3 | 4 |
| 2. I get scared when I have to go to the doctor | 0 | 1 | 2 | 3 | 4 |
| 3. I get scared when I have to go to the hospital | 0 | 1 | 2 | 3 | 4 |

| WORRY (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|---|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. I worry about side effects from medical treatments | 0 | 1 | 2 | 3 | 4 |
| 2. I worry about whether or not my medical treatments are working | 0 | 1 | 2 | 3 | 4 |
| 3. I worry that my cancer will come back or relapse | 0 | 1 | 2 | 3 | 4 |

| COGNITIVE PROBLEMS (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|---|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. It is hard for me to figure out what to do when something bothers me | 0 | 1 | 2 | 3 | 4 |
| 2. I have trouble solving math problems | 0 | 1 | 2 | 3 | 4 |
| 3. I have trouble writing school papers or reports | 0 | 1 | 2 | 3 | 4 |
| 4. It is hard for me to pay attention to things | 0 | 1 | 2 | 3 | 4 |
| 5. It is hard for me to remember what I read | 0 | 1 | 2 | 3 | 4 |

In the past one month, how much of a problem has this been for you ...

| PERCEIVED PHYSICAL APPEARANCE (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|---|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. I feel I am not good looking | 0 | 1 | 2 | 3 | 4 |
| 2. I don't like other people to see my scars | 0 | 1 | 2 | 3 | 4 |
| 3. I am embarrassed when others see my body | 0 | 1 | 2 | 3 | 4 |

| COMMUNICATION (problems with...) | Never | Almost Never | Some- times | Often | Almost Always |
|--|--------------|-------------------------|------------------------|--------------|--------------------------|
| 1. It is hard for me to tell the doctors and nurses how I feel | 0 | 1 | 2 | 3 | 4 |
| 2. It is hard for me to ask the doctors and nurses questions | 0 | 1 | 2 | 3 | 4 |
| 3. It is hard for me to explain my illness to other people | 0 | 1 | 2 | 3 | 4 |

The Satisfaction with Life Scale

By Ed Diener, Ph.D.

DIRECTIONS: Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number in the line preceding that item. Please be open and honest in your responding.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Slightly Disagree
- 4 = Neither Agree or Disagree
- 5 = Slightly Agree
- 6 = Agree
- 7 = Strongly Agree

_____ 1. In most ways my life is close to my ideal.

_____ 2. The conditions of my life are excellent.

_____ 3. I am satisfied with life.

_____ 4. So far I have gotten the important things I want in life.

_____ 5. If I could live my life over, I would change almost nothing.

Benefit Finding

DIRECTIONS: Below are 17 statements that express some potential benefit that you might have gained from your experience with cancer as an adolescent. Using the scale listed below, indicate how much you believe you have benefited from each item. Please be open and honest in your responding.

| | | | | |
|-------------------|-----------------|-------------------|--------------------|------------------|
| 1 | 2 | 3 | 4 | 5 |
| <i>Not at all</i> | <i>A little</i> | <i>Moderately</i> | <i>Quite a bit</i> | <i>Extremely</i> |

Having cancer as an adolescent....

- | | |
|---|-------|
| 1. has led me to be more accepting of things. | _____ |
| 2. has taught me how to adjust to things I cannot control. | _____ |
| 3. has helped me take things as they come. | _____ |
| 4. has brought my family closer together. | _____ |
| 5. has made me more sensitive to family issues. | _____ |
| 6. has taught me that everyone has a purpose in life. | _____ |
| 7. has shown me that all people need to be loved. | _____ |
| 8. has made me realize the importance of planning for my family's future. | _____ |
| 9. has made me more aware and concerned for the future of all human beings. | _____ |
| 10. has taught me to be patient. | _____ |
| 11. has led me to deal better with stress and problems. | _____ |
| 12. has led me to meet people who have become some of my best friends. | _____ |
| 13. has contributed to my overall emotional and spiritual growth. | _____ |
| 14. has helped me become more aware of the love and support available from other people. | _____ |
| 15. has helped me realize who my real friends are. | _____ |
| 16. has helped me become more focused on priorities, with a deeper sense of purpose in life. | _____ |
| 17. has help me become a stronger person, more able to cope effectively with future life challenges. | _____ |

Subjective Happiness Scale (SHS)

By Sonja Lyubomirsky, Ph.D.

For each of the following statements and/or questions, please circle the point on the scale that you feel is most appropriate in describing you.

1. In general, I consider myself:

| | | | | | | |
|-------------------------------|---|---|---|---|---|---------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not a very happy person | | | | | | a very happy person |

2. Compared to most of my peers, I consider myself:

| | | | | | | |
|---------------|---|---|---|---|---|---------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| less happy | | | | | | more happy |

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

| | | | | | | |
|---------------|---|---|---|---|---|-----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all | | | | | | a great deal |

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

| | | | | | | |
|---------------|---|---|---|---|---|-----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all | | | | | | a great deal |

Revised Life Orientation Test
Scheier, Carver, & Bridges (1994)

Read each item carefully. Using the scale shown below, please indicate how much you agree with each of the following statements.

0 = Strongly Disagree 1 = Disagree 2 = Neutral 3 = Agree 4 = Strongly Agree

Please be as accurate and honest as you can in rating these statements. Try not to let your answers to one question influence your answers to other questions. There are no right or wrong answers.

- _____ 1. In uncertain time, I usually expect the best.
- _____ 2. It's easy for me to relax.
- _____ 3. If something can go wrong for me, it will.
- _____ 4. I'm always optimistic about my future.
- _____ 5. I enjoy my friends a lot.
- _____ 6. It's important for me to keep busy.
- _____ 7. I hardly ever expect things to go my way.
- _____ 8. I don't get upset too easily.
- _____ 9. I rarely count on good things happening to me.
- _____ 10. Overall, I expect more good things to happen to me than bad.

Zimbardo Time Perspective Inventory
Zimbardo & Boyd, 1999

DIRECTIONS: Please read each item and, as honestly as you can, answer the following question:
“How characteristic or true is this of you?”

1
2
3
4
5
Very uncharacteristic Uncharacteristic Neutral Characteristic Very characteristic

1. ___ I believe that getting together with one's friends to have fun is one of life's important pleasures.
2. ___ Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories.
3. ___ Fate determines much of my life.
4. ___ I often think of what I should have done differently in my life.
5. ___ My decisions are mostly influenced by people and things around me.
6. ___ I believe that a person's day should be planned ahead each morning.
7. ___ It gives me pleasure to think about my past.
8. ___ I do things impulsively.
9. ___ If things don't get done on time, I don't worry about it.
10. ___ When I want to achieve something, I set goals and consider specific means for reaching those goals.
11. ___ On balance, there is much more good to recall than bad in my past.
12. ___ When listening to my favorite music, I often lose track of all time.
13. ___ Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.
14. ___ Since whatever will be will be, it doesn't really matter what I do.
15. ___ I enjoy stories about how things used to be in the “good old times.”
16. ___ Painful past experiences keep being replayed in my mind.
17. ___ I try to live my life as fully as possible, one day at a time.
18. ___ It upsets me to be late for appointments.
19. ___ Ideally, I would live each day as if it were my last.
20. ___ Happy memories of good times spring readily to my mind.
21. ___ I meet my obligations to friends and authorities on time.
22. ___ I've taken my share of abuse and rejection in the past.
23. ___ I make decisions on the spur of the moment.
24. ___ I take each day as it is rather than try to plan it out.
25. ___ The past has too many unpleasant memories that I prefer not to think about.
26. ___ It is important to put excitement in my life.
27. ___ I've made mistakes in the past that I wish I could undo.

1 2 3 4 5
Very uncharacteristic Uncharacteristic Neutral Characteristic Very characteristic

28. ___ I feel that it's more important to enjoy what you're doing than to get work done on time.
29. ___ I get nostalgic about my childhood.
30. ___ Before making a decision, I weigh the costs against the benefits.
31. ___ Taking risks keeps my life from becoming boring.
32. ___ It is more important for me to enjoy life's journey than to focus only on the destination.
33. ___ Things rarely work out as I expected.
34. ___ It's hard for me to forget unpleasant images of my youth.
35. ___ It takes joy out of the process and flow of my activities, if I have to think about goals, outcomes, and products.
36. ___ Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.
37. ___ You can't really plan for the future because things change so much.
38. ___ My life path is controlled by forces I cannot influence.
39. ___ It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway.
40. ___ I complete projects on time by making steady progress.
41. ___ I find myself tuning out when family members talk about the way things used to be.
42. ___ I take risks to put excitement in my life.
43. ___ I make lists of things to do.
44. ___ I often follow my heart more than my head.
45. ___ I am able to resist temptations when I know that there is work to be done.
46. ___ I find myself getting swept up in the excitement of the moment.
47. ___ Life today is too complicated; I would prefer the simpler life of the past.
48. ___ I prefer friends who are spontaneous rather than predictable.
49. ___ I like family rituals and traditions that are regularly repeated.
50. ___ I think about the bad things that have happened to my in the past.
51. ___ I keep working at difficult, uninteresting tasks if they will help me get ahead.
52. ___ Spending what I earn on pleasures today is better than saving for tomorrow's security.
53. ___ Often luck pays off better than hard work.
54. ___ I think about the good things that I have missed out on in my life.
55. ___ I like my close relationships to be passionate.
56. ___ There will always be time to catch up on my work.

Vita

Matthew John Bitsko was born on June 18, 1972, in Lima, Pennsylvania, and is an American citizen. He graduated from Great Valley High School located in Malvern, Pennsylvania in 1990. In 1994, he received his Bachelor of Arts from Randolph-Macon College with a major in Psychology and minor in Philosophy. Matt received his Master of Science in Counseling Psychology from Springfield College in 1997. Before enrolling in Virginia Commonwealth University's doctoral program in Counseling Psychology in 2001, he worked with at-risk and substance-abusing adolescents at LaSalle Prevention in Albany, New York, and Aquila in Wilmington, Delaware.

Matt is married to Kelly Patricia Bitsko and is the proud father of Luke McDermott Bitsko. They are currently expecting a second child in November of 2005.